

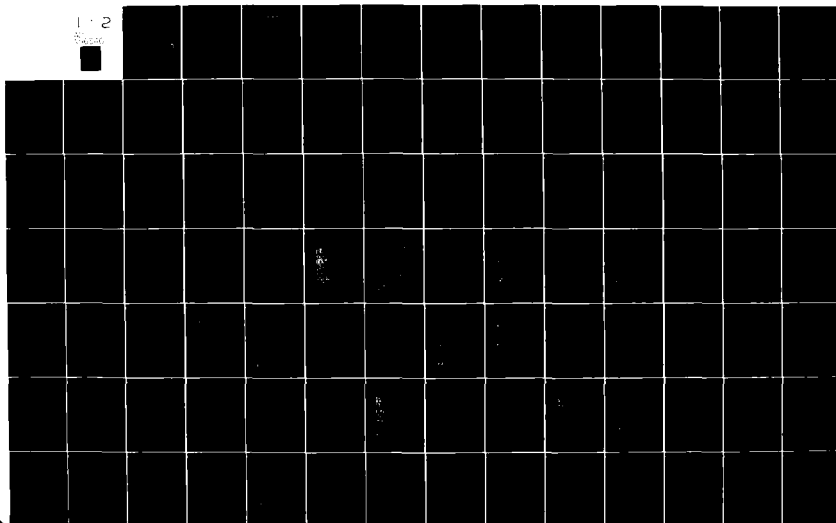
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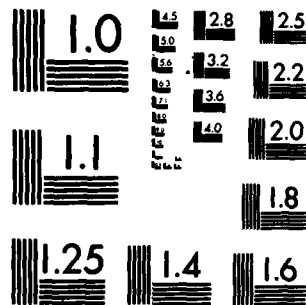
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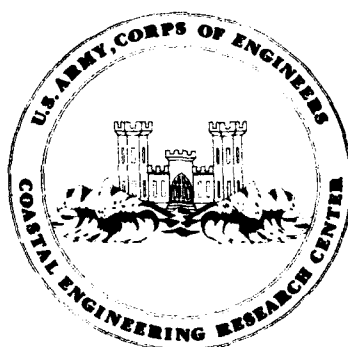
# **Benthic Community Response to Dredging Borrow Pits, Panama City Beach, Florida**

by

Carl H. Saloman, Steven P. Naughton, and John L. Taylor

MISCELLANEOUS REPORT NO. 82-3

MARCH 1982



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <p>&gt; This report gives biological and physical oceanographic data from base-line work, and studies of dredged and undredged sediments before and after dredging (9-meter contour) for beach nourishment at Panama City Beach, Florida. These studies were designed to show major short-term environmental effects of offshore dredging and included analyses of hydrology, sediments, and benthos.</p> <p style="text-align: right;">(continued)</p>		

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Hydrological measurements were limited to water temperature and salinity. Analysis of surface sediments included particle-size distribution, carbon chemistry, and statistical properties of mean grain size, sorting, skewness, and kurtosis. Average and extreme periods of water temperature and salinity were recorded. Regional nearshore sediments proved to be fine sand, containing less than 1 percent silt-clay, that was moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic. Total carbon content averaged less than 0.30 percent, and most of that occurred in the form of carbonate deposits. Over a postdredging study period of 1 year, sediment samples from borrow pits showed little variation from these general features.

In studies of the benthos, 362 species and 58,068 individuals were recorded among 14 invertebrate phyla and bony fishes. Dominant groups by species and abundance included annelida, mollusca, and arthropoda (crustacea). Faunal comparisons between dredged and undredged areas were made on the basis of species richness and abundance, the Shannon-Weaver index of diversity (H'), Pielou's index of equitability (J'), Morisita's index of faunal similarity (together with matrices and classification diagrams derived from that index), and two statistical derivations, based on diversity and abundance data, that were designed to show sample-to-sample faunal variations and the time period required for faunal recovery in borrow pits. Information obtained from these procedures showed that recovery began soon after dredging and was complete, or nearly so, within 1 year.

These results were similar in most respects to those from study of offshore dredging elsewhere in comparable geographic settings. Even so, the need for close association between ecological research and coastal engineering programs is emphasized.

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## PREFACE

This report gives preconstruction and postconstruction environmental data related to short-term effects of beach nourishment at Panama City Beach, Florida. Areas of study included water quality, sediments, and benthic invertebrates. Dredging and beach restoration were done by the U.S. Army Engineer District, Mobile, and research was sponsored by the U.S. Army Coastal Engineering Research Center (CERC), and by the National Marine Fisheries Service (NMFS), Gulf Fisheries Center, Panama City Beach, Florida. The work was carried out under the coastal ecology research program.

The report is based on data collected and compiled by Carl H. Saloman and Steven P. Naughton, NMFS, who assisted Dr. John L. Taylor, Taylor Biological Company, Inc., in preparing the report under CERC Contract No. DACW72-81-M-0198. Invaluable assistance with statistical programs and data processing was provided by Dr. S.A. Bloom, Department of Zoology, University of Florida, Gainesville. Editorial reviews were provided by E. Nakamura, NMFS, and by B. Hall, CERC.

The authors acknowledge the assistance of their colleagues for identification of the following faunal groups: Dr. R.W. Heard, Jr., Gulf Coast Research Laboratory, Ocean Springs, Mississippi (crustacea); and J.R. Hall, National Marine Fisheries Service, Washington, D.C. (mollusca). Identification of species in other groups was done by the authors with the aid of reference material available from NMFS.

E.J. Pullen, Chief, Coastal Ecology Branch, served as contract monitor for this report, under the general supervision of R.P. Savage, Chief, Research Division; he also assisted in the editorial review process and made arrangements for several technical aspects of manuscript preparation and publication.

Comments on this publication are invited.

Approved for publication in accordance with Public Law 166, 79th Congress, approved 31 July 1945, as supplemented by Public Law 172, 88th Congress, approved 7 November 1963.



TED E. BISHOP  
Colonel, Corps of Engineers  
Commander and Director

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# CONVERSION FACTORS, U.S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U.S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	by	To obtain
inches	25.4	millimeters
	2.54	centimeters
square inches	6.452	square centimeters
cubic inches	16.39	cubic centimeters
feet	30.48	centimeters
	0.3048	meters
square feet	0.0929	square meters
cubic feet	0.0283	cubic meters
yards	0.9144	meters
square yards	0.836	square meters
cubic yards	0.7646	cubic meters
miles	1.6093	kilometers
square miles	259.0	hectares
knots	1.852	kilometers per hour
acres	0.4047	hectares
foot-pounds	1.3558	newton meters
millibars	$1.0197 \times 10^{-3}$	kilograms per square centimeter
ounces	28.35	grams
pounds	453.6	grams
	0.4536	kilograms
ton, long	1.0160	metric tons
ton, short	0.9072	metric tons
degrees (angle)	0.01745	radians
Fahrenheit degrees	5/9	Celsius degrees or Kelvins <sup>1</sup>

<sup>1</sup>To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use formula:  $C = (5/9) (F - 32)$ .

To obtain Kelvin (K) readings, use formula:  $K = (5/9) (F - 32) + 273.15$ .

BENTHIC COMMUNITY RESPONSE

TO DREDGING BORROW PITS,

PANAMA CITY BEACH, FLORIDA

by

*Carl H. Saloman, Steven P. Naughton,*

and

*John L. Taylor*

I. INTRODUCTION

1. Background.

On the gulf coast of northwestern Florida, at Panama City Beach, major environmental alterations over the past 10 years have provided an exceptional opportunity to determine the degree and duration of these alterations associated with the practice of dredging and beach nourishment. Historically, these events have included the development of several engineering plans, the intervention of a major hurricane, an emergency dredging and beach restoration program, and several ecological studies related to disturbances caused by both the hurricane and the dredging.

In 1970, the Senate Committee on Public Works acknowledged an urgent need for beach erosion control and hurricane protection at Panama City Beach. This critical situation was referred to the U.S. Army Engineer District, Mobile, for study. In 1975, the Mobile District completed a feasibility report that contained recommendations for beach nourishment and maintenance along 29.8 kilometers of shoreline from the entrance to St. Andrew Bay, west to Philips Inlet (Wilson, 1975). During preparation of the report, the U.S. Army Coastal Engineering Research Center (CERC) sponsored a research program to determine ecological changes that could be expected from the dredging and coastal construction work. This investigation, which was conducted by the National Marine Fisheries Service (NMFS) between November 1974 and October 1975, involved the study of hydrology, sediments, and benthic fauna at two offshore stations, and at five stations on each of nine nearshore transects. Emphasis was placed on diversity, abundance, and distribution of bottom-dwelling invertebrates which are directly affected by dredging and redistribution of sediments (Saloman, 1976).

Before this investigation was completed, Hurricane Eloise struck Panama City Beach (25 September 1975). Winds up to 185 kilometers per hour and seas estimated at 9 meters caused severe erosion and extensive property damage (Saloman, 1976; Salsman and Ciesluk, 1978). In winter months that followed, high wind and waves associated with periodic cold fronts caused further shoreline erosion.

In anticipation of the storm, and realizing the opportunity to measure large-scale environmental changes alongshore, NMFS conducted an intertidal benthic survey that consisted of faunal sampling before the storm and during a 1-month period after the storm. The pattern of faunal disruption and recovery recorded in this unique study provided considerable insight into the sequence of population changes to be expected in the proposed beach nourishment program (Saloman and Naughton, 1977).

In the next year (July-August 1976), the Corps of Engineers funded an emergency dredging operation to restore the most ravaged beach areas and established berms to provide temporary protection against storms normally occurring during fall and winter seasons. Numerous borrow areas, 305 to 610 meters offshore (6- to 9-meter depth) were dredged and about 306,000 cubic meters of sand was pumped ashore at 23 distribution sites (U.S. Army Engineer District, Mobile, 1976).

At the same time, NMFS again conducted studies of the nearshore environment over a 3-month period prior to dredging, during dredging, and for about 6 months after dredging was completed. Benthic sampling sites were selected in nourishment areas and in unrestored areas. The location of the three nourishment areas coincided with the location of benthic base-line data collected in 1974 (Saloman and Naughton, unpublished data).

Based on emergency nourishment experience and the analysis of the Hurricane Eloise data collected, the Mobile District revised original plans for shoreline protection and maintenance at Panama City Beach. The revised plan included berm enlargement on the beach front and additions to height and width of backbeach dunes. Consequently, the volume of sand estimated for original construction was increased from 4 to 8 million cubic meters; and borrow areas formerly selected at 9-meter depths were relocated seaward along the 18-meter bottom contour (Wilson, 1976).

Onshore, the environmental impact of this latest plan can probably be predicted to a high degree of accuracy on the basis of findings in NMFS beach surveys in 1974 and 1976. Briefly stated, the results of these investigations showed that shallow, subtidal and intertidal faunas recover rapidly following major disturbances (natural or man-induced). A more recent study funded by CERC provides additional information on the long-term environmental effects of dredging in offshore borrow areas at Panama City Beach (Culter and Mahadevan, 1982). A study of short-term environmental effects of dredging in offshore borrow areas at Panama City Beach is the subject of the present report.

## 2. Purpose.

This report provides a comprehensive analysis of benthic data from studies designed to show short-term environmental effects of offshore dredging during the emergency restoration project at Panama City Beach in July-August 1976.

It is based on comparisons of hydrological, sedimentological, and biological data from collections at stations A and B in base-line studies that began in 1974 (Saloman, 1976), and from control and experimental samples taken by NMFS in undredged bottom and borrow areas over a 20-month period between April 1976 and November 1977.

## II. STUDY AREA

Panama City Beach is located on the northwestern gulf coast of Florida about 145 kilometers east of Pensacola. The study area covers 35 kilometers and extends from West Pass at the entrance to St. Andrew Bay, to Philips Inlet (Fig. 1). The beach's sugarlike sand and exceptionally clear water are major attractions for about 2 million visitors annually. Tourism is a great economic asset and most of the beach has been developed to accommodate tourists and provide various types of recreation.

Regional meteorological and oceanographic conditions were described by Salsman and Ciesluk (1978). Climate is humid and subtropical. Average summer and winter air temperatures are 28° and 12° Celsius, with about the same water temperatures at respective seasons. Winds are 20 kilometers per hour or less at most times, and rarely exceed 37 kilometers per hour. From spring through late summer, the net wind direction is southerly, but between September and January, the direction shifts to northerly. Waves are usually about 0.9 meter; tides are diurnal, and tidal amplitude is normally about 0.6 meter; and tidal currents are generally below 4 kilometers per hour. However, during tropical storms and ahead of cold fronts, strong winds off the gulf produce waves, tides, and currents far greater than average. Even in less severe weather, beach sand is easily eroded because of its fine texture (0.1- to 0.2-millimeter median diameter). Seaward, a series of parallel sandbars protects the beach to some extent, but beyond, the featureless bottom slopes rather quickly to a 15-meter depth at 1.6 kilometers from shore. At greater depths, sediments are somewhat coarser and widely scattered limestone reefs appear in low relief.

## III. SAMPLING STATIONS AND RATIONALE

The sampling data in this report were collected in about 9 meters of water at stations located offshore of Panama City Beach. As a matter of convenience, and for clarity, these stations have been separated into three groups since there were differences in their locations, sampling procedures, and objectives.

The first group includes stations A and B (Fig. 2) of the preconstruction investigation of 1974-75. Station A was located seaward of the Fiesta Motel about midway between West Pass and Philips Inlet. Station B was seaward of the Roundtowner Motel, which is just east of Philips Inlet. The sampling schedule at these stations consisted of an initial collection in November 1974, and subsequent quarterly collections in February, May, and August 1975. Both were sampled before beach nourishment to determine seasonal environmental conditions (base-line data) in the zone designated for dredging (Saloman, 1976).

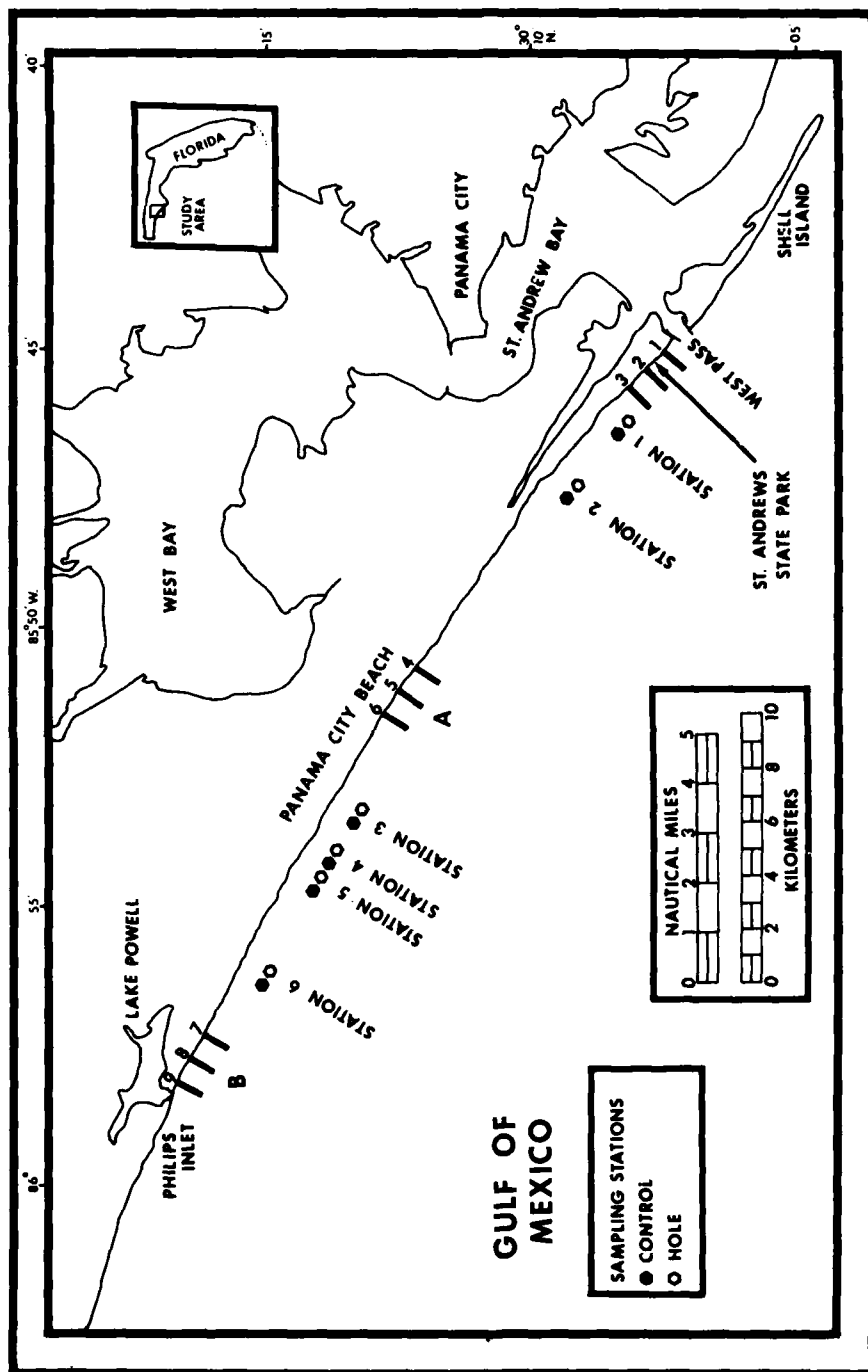


Figure 1. Study area at Panama City Beach, Florida, showing stations 1 to 6, July 1977.

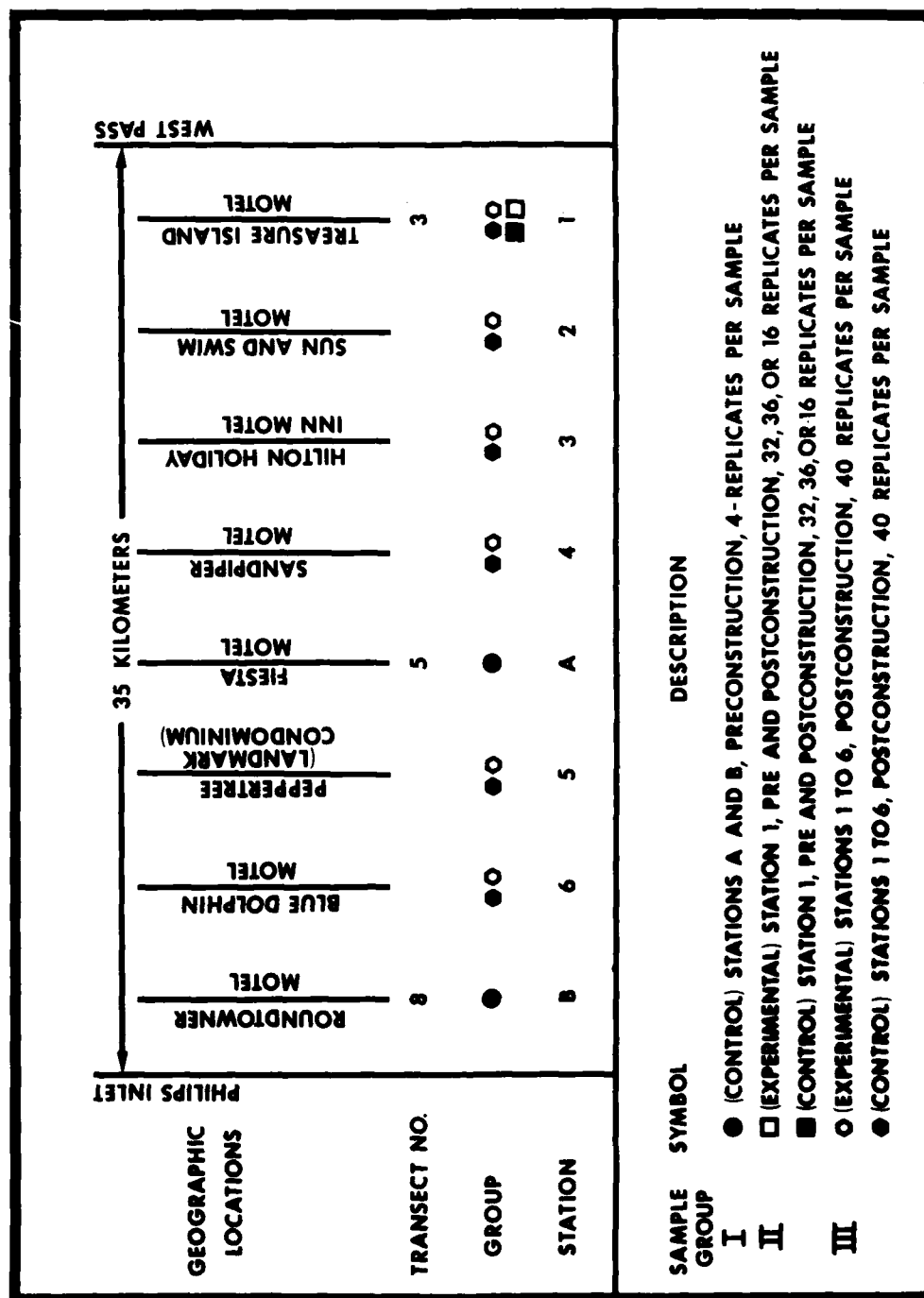


Figure 2. Schematic representation of sampling plan, Panama City, Florida.

The second group contains station 1 (Fig. 2), located seaward of Treasure Island Motel (near the eastern end of the study area), which had two collecting areas--one at the borrow site and the other a short distance away on undredged bottom. Samples were taken from the designated borrow site before dredging in April, June, and July 1976. Then 2 days after dredging (10 August 1976), concurrent sampling was started inside and outside the borrow pit. Sampling in both the pit (experimental samples) and adjacent to it (control samples) continued on a weekly schedule for 1 month. Samples were taken twice the next month, and then monthly thereafter until the study was concluded in November 1977. These samples were collected to record diversity and abundance of benthic fauna at a specific dredge site before dredging started, and then, over time, to compare population characteristics of control samples with experimental samples.

The third group includes stations 1, 2, 3, 4, 5, and 6 for one-time sampling only inside and outside borrow pits during July 1977--about 12 months after dredging (Fig. 2). The six stations were located seaward of the following landmarks: station 1, Treasure Island Motel; station 2, Sun and Swim Motel; station 3, Hilton Holiday Inn; station 4, Sandpiper Motel; station 5, Peppertree Condominium (now Landmark Condominium); and station 6, Blue Dolphin Motel. These collections provided a comparison of fauna in control and experimental samples from a number of borrow pits for an evaluation of short-term recovery within a period of 1 year. Throughout this report, samples from stations A and B, and preconstruction samples from station 1, are referred to as baseline or control samples; all other samples from outside borrow pits are called control samples, and all samples from within borrow pits are designated experimental samples.

#### IV. SAMPLING AND ANALYTICAL PROCEDURES

##### 1. Hydrology.

Surface water temperature and salinity measurements were recorded in each sampling period at stations A and B, and on a monthly schedule over the duration of sampling at station 1. Temperature was taken using a hand-held, mercury bulb thermometer graduated in Celsius degrees. Salinity, in parts per thousand, was determined with a Goldberg temperature-compensated refractometer (American Optical Co., Model No. 10419).

##### 2. Sedimentology.

Sediment samples were collected to determine textural features, statistical properties, and carbon chemistry. Textural parameters included weight percentages of granules, sand, and silt-clay. Mean grain size, standard deviation (as a measure of sorting), skewness, and kurtosis were calculated and interpreted according to the system described by Folk (1974). The carbon analyses included total carbon, total organic carbon, and total carbonate carbon.



Collections were limited to surface samples that included the upper 10 centimeters of sediment. Sediments were collected in standard 8-ounce, screw-cap jars; all samples were stored frozen prior to analyses. Detailed analytical methods are described by Saloman (1976).

For textural analyses, sediment samples were sieved at 1-phi intervals in nested screens placed on a mechanical shaker. Fraction weights were recorded to the closest milligram and tabulated as weight percentages. No hydrometer or pipette determinations were required because silt-clay percentages were quite low. Based on grain-size distribution curves, formulas introduced by Folk (1974) were used to calculate statistical properties. Carbon analyses were made using a Leco 750-100, 90-second carbon analyzer.

Additionally, divers recorded observations of sediment inside and outside the borrow pit at station 1. These observations were made on a regular basis during the first postconstruction collection, and in subsequent collections, until the study ended.

### 3. Benthos.

At all collecting points, infauna was sampled with a hand-operated plug sampler (box corer) that covered a surface area of 1/64 square meter and penetrated the bottom to a depth of 23 centimeters (Saloman, 1976). Replicate samples were taken at each site, but the number was not always the same for each of the three station groups. At stations A and B, four replicates composed a sample (preconstruction base-line study of 1974-75). At station 1, the first collection contained 32 replicates (19 April 1976), while second and third preconstruction samples each consisted of 36 replicates. After dredging, however, both control and experimental samples from station 1 each included 16 replicates. Finally, in the one-time collection at stations 1 to 6, 1 year after dredging, control and experimental samples were each composed of 40 replicates. The decision to take more than 4 replicates in most samples was somewhat arbitrary, since sampling to develop a species rarefaction curve showed that 4 plugs comprised an adequate qualitative and quantitative sample of the nearshore benthos (Saloman, 1976). For reference, a schematic representation of the overall sampling plan was prepared to show geographic relationships among stations within the study area, landmarks along the shore, pertinent transect locations from studies started in 1974, and the sampling locations of borrow pits and undredged bottom studied between April 1976 and July 1977 (Fig. 2).

All benthic samples were taken by scuba divers and sieved on shipboard in a 0.3-meter diameter screen of 0.7 millimeter mesh. Material remaining on the screen was preserved with 10-percent seawater formalin in standard 2-quart, screwcap jars. Rose bengal dye was added to the formalin to stain organisms and facilitate their subsequent separation from debris. In the laboratory,

each collection was resieved under tapwater and all specimens from respective samples were stored in 70-percent isopropanol for final sorting, taxonomic determinations, and species counts. The 0.7 millimeter screen was used instead of a conventional 0.5 millimeter one because the former facilitated sieving operations and retained a percentage of infauna that was shown to be very nearly equivalent to that sampled by the smaller mesh size.

As in Saloman's (1976) work, biological data presented here include a species checklist and individual station listings that show species occurrence and frequency, together with calculations for number of individuals per square meter and the Shannon-Weaver index of faunal diversity ( $H'$ ). Also, as a measure of relative species dominance, equitability ( $J'$ ) was computed for each station (Pielou, 1975). Two other statistical procedures were also employed. The first, Morisita's Index (Morisita, 1959; Bloom, 1981), provided a numerical method of comparing faunal similarity between comparable sets of control and experimental samples, and was used to develop similarity matrices and classification diagrams that graphically show faunal relationships based on station data for diversity and abundance.

The second procedure, a stability analysis (Bloom, 1980), is a multivariate, nonparametric statistical and geometric procedure that converts biotic data from control and experimental samples into communities that can be represented mathematically. For one representation all base-line and control data were used to define numerical characteristics of a preconstruction community cluster that has a central point, or centroid, and certain specific spatial limits. In the first stability analysis, the distance from the centroid to control and experimental samples was used to determine variability among samples from undredged and dredged bottoms. In the second analysis, community clusters calculated for experimental samples were compared to the preconstruction cluster, in postconstruction sequence. When a boundary or an experimental cluster met the limit of the preconstruction cluster, faunal recovery was accepted. Experimental collections from station 1, where sampling over time was done, were the only borrow pit samples used in this analysis.

## V. RESULTS

### 1. General.

The findings in this section are based on the detailed information given in Appendixes A to F. Appendix A lists abiotic parameters by station. Appendix B is a checklist of all organisms collected at offshore stations from November 1974 to November 1977. Appendix C contains all biological station data and indices of diversity ( $H'$ ) and equitability ( $J'$ ). Appendix D (Similarity Matrices) and E (Classification Analyses and Dendrograms) are both based on Morisita's index of faunal similarity. Appendix F is a graphic representation of the two stability analyses. The first graph shows comparative variability among control and experimental samples when compared with the centroid of a community cluster calculated from all base-line and control samples. The second

is a stability plot for experimental samples from station 1 showing the post-construction time lapse before faunal recovery appears evident.

## 2. Hydrology.

Water temperature and salinity data from the 1974-75 sampling at stations A and B were compared to data from station 1 sampled during similar months in 1976-77 (Table 1). Both sets of data show normal seasonal trends in water temperature, except for one abnormally low value of 9° Celsius recorded in February 1977.

Salinity was low at stations A and B in August 1975, but salinity during other months was 32 parts per thousand or higher, and similar to station 1 records (Table 1). Appreciable declines in salinity apparently coincide with periods of seasonally heavy rainfall.

## 3. Sedimentology.

The influence of dredging on sediment composition was determined by analyses of base-line and control samples, compared to samples taken from borrow pits. Base-line data came from seasonal sediment collections at stations A and B, and from those taken before dredging at station 1 in April, June, and July 1976. Control data were available from samples outside the borrow pit at station 1, and from samples collected in an undredged bottom at stations 1 to 6 in July 1977. Data from experimental samples also came from periodic collections at station 1, and from borrow pit collections in the single survey in July at stations 1 to 6.

Textural, statistical, and chemical properties of base-line samples (Table 2) were used to describe natural features of offshore sediments, since these samples were collected in all seasons prior to dredging at eastern, central, and western locations within the study area (see App. A).

a. Texture. Sediment composition was about 99-percent sand, and both granules and silt-clay size particles contributed less than 1 percent.

b. Statistical Properties. Values for mean grain size, standard deviation, skewness, and kurtosis classified these sediments as fine sand that is moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic (sorted better in the center than at the ends of grain size distribution curves).

c. Carbon Chemistry. Total carbon content of base-line samples was less than 0.30 percent. Carbonate carbon contributed somewhat more to this total than organic carbon, indicating that most carbon occurred in the form of shell fragments rather than as organic deposits.

For station 1, when these features were compared to control and experimental samples, noteworthy differences appeared only in experimental samples.

Table 1. Water temperature and salinity at stations A and B before the 1974-75 dredging, and at station 1 before and after the 1976 dredging for beach nourishment at Panama City Beach, Florida.

Station	Date	Water Temp. (°C)	Salinity (ppt)
<u>1974</u>			
A	18 Nov.	21.0	34.5
B	18 Nov.	20.8	34.3
<u>1975</u>			
A	20 Feb.	17.4	34.4
B	20 Feb.	17.5	33.9
A	20 May	26.2	32.2
B	20 May	26.0	32.2
A	12 Aug.	28.3	26.2
B	12 Aug.	28.5	26.1
<u>1976</u>			
1 (before)	Apr.	20.2	33.3
	May	20.2	34.9
	June	25.7	32.3
	July	28.0	33.3
	Aug.	27.0	35.3
	Sept.	27.8	32.6
	Oct.	24.9	33.1
	Nov.	18.0	33.2
1 (after)	Dec.	12.5	34.1
	<u>1977</u>		
	Jan.	12.4	33.3
	Feb.	9.0	34.3
	Mar.	14.3	34.4
	Apr.	22.4	33.5
	May	21.8	34.3
	June	25.7	32.1
	July	27.5	33.6
	Aug.	29.0	35.3
	Sept.	27.7	32.6
	Oct.	25.0	33.1
	Nov.	-	-

Table 2. Textural and statistical properties of sediments in control (undredged bottom) and experimental (borrow pit) samples taken 1 year after dredging at stations 1 to 6 along the 9-meter depth contour off Panama City Beach, Florida, July 1977.

Station	Textural			Statistical			
	Granule (pct)	Sand (pct)	Silt-clay (pct)	Mean grain size (phi)	Std. dev. (phi)	Skewness	Kurtosis
1							
Control		99.70	0.30	2.45	0.45	-0.19	1.18
Experimental		98.64	1.36	2.50	0.53	-0.00	1.39
2							
Control		99.65	0.35	2.45	0.44	-0.18	1.15
Experimental		99.80	0.20	2.43	0.48	-0.19	1.21
3							
Control		99.88	0.12	2.21	0.62	-0.32	1.11
Experimental	0.92	98.96	0.11	1.75	1.06	-0.46	0.82
4							
Control		99.86	0.14	2.24	0.61	-0.31	1.16
Experimental	0.08	99.81	0.11	2.01	0.83	-0.41	0.95
5							
Control		99.86	0.14	2.31	0.59	-0.33	1.34
Experimental		99.86	0.14	2.26	0.58	-0.28	1.11
6							
Control	0.34	99.52	0.14	2.11	0.76	-0.40	1.09
Experimental	0.14	99.76	0.11	2.31	0.61	-0.34	1.39

The particle-size distribution of sand was below 99 percent in experimental samples from September, October, and November 1976, and from January, June, July, August, and September 1977. The lowest level (92 percent) was recorded in September 1976. Other low values were only in the 97- to 98-percent range. Granule-size particles were consistently under 1 percent, but 11 experimental samples contained more than 0.30-percent silt-clay. The highest value for the silt-clay fraction was 8.1 percent in a sample collected on 21 September 1976. Values of more than 1-percent silt-clay were also recorded in another September sample as well as in October and November 1976, and again in January, June, July, August, and September 1977.

Mean grain size for experimental samples did not range below fine sand. Sorting categories changed for two experimental samples. In the September 1976 sample, sorting was only moderate; in the May 1977 sample, it proved to be extremely poor. For skewness, five experimental samples exhibited an uncharacteristic trend that placed them in classifications of fine skewed to strongly fine skewed. The single sample classified as strongly fine skewed was obtained in September 1976; the others were collected in September and October 1976, and August and September 1977. Deviation from the normal leptokurtic condition was recorded for five experimental samples. Values corresponding to mesokurtic were recorded in August 1976, and April and May 1977. Values in the very leptokurtic range were recorded in January and June 1977.

A carbon content percentage greater than the base-line average was recorded in 12 experimental samples; however, this number of samples may be low since no carbon analyses were made after the June 1977 sampling. The highest recorded value was 2.32 percent for the September 1976 sample. Other slightly elevated values ranged between 0.31 and 1.21 percent. Among these 12 samples, the proportion of organic carbon to carbonate carbon was higher for carbonate in 6 samples, higher for organic in 5, and in 1, the ratio was nearly even.

Sediment data for control and experimental samples collected at the six stations in July 1977 has been tabulated for comparison (Table 2). These analyses include only textural and statistical properties; no information on carbon chemistry was available.

At the six stations, granule-size particles were present in only four samples, and three of these came from borrow pits at stations 3, 4, and 6. The single control sample containing granules also came from station 6, and the overall granule distribution was under 1 percent. Sand content was about 99 percent in all collections. For the silt-clay fraction, only one value was considered abnormally high and that was recorded for the experimental sample from station 1 (1.36 percent).

With the one exception of medium sand (station 3, experimental), all samples fell into the classification of fine sand. Calculations for sorting showed that 9 of 12 samples were well to moderately well sorted. Other classifications included moderately sorted (station 4, experimental and station 6, control) and

poorly sorted (station 3, experimental). Skewness values were characteristic for five samples (symmetrical to coarsely skewed), and the other seven samples fit the strongly coarse-skewed classification and were about equally divided between the control and experimental samples. The normal, or leptokurtic condition, was found in nine samples. Of the remaining three, the experimental sample from station 4 and the control sample from station 6 were mesokurtic, while the experimental sample from station 3 was platykurtic.

Although sedimentological conditions in some experimental samples varied from the base-line criteria until late 1977, large variations were confined to borrow pit sediments at station 1 within 2 months after dredging. During that period, properties which may have been limiting to benthos were high silt-clay and organic carbon content.

Diver reports between 18 August (10 days after dredging) and 4 October 1976, stated that the station 1 borrow pit was 3 to 5 meters deep and had very dark surface sediments of an extremely soft, silty texture. Initially no surface signs of benthic life (burrows, mounds, or trails) were reported. Within the next month, sediments had become firmer and sandier; signs of infauna activity were conspicuous, crabs and other epibenthos were numerous, and a variety of fishes was observed. After 12 months, and on the last dive at station 1 in November 1977, divers concluded that borrow pits had filled to within a meter of surrounding bottom, and that sediments inside were still finer, darker, and less compact than sediments outside, but marine life appeared similar in control and experimental areas.

#### 4. Benthos.

The checklist of organisms in Appendix B contains about 362 organisms at the species level, representing 14 invertebrate phyla and the vertebrate class, Osteichthyes (bony fishes). Of this number, Annelida had 152 species (42 percent), Arthropoda had 108 (30 percent), and there were 69 mollusks (19 percent). The remaining 33 species (9 percent) were divided among 11 groups: Cnidaria, Platyhelminthes, Nemertinea, Nematoda, Phoronida, Brachiopoda, Sipunculida, Echiurida, Echinodermata, Hemichordata, and Cephalochordata.

Species counts from each station showed a total of 58,068 individuals collected. On a percentage basis, more than half were annelids (55 percent), 19 percent were mollusks, 18 percent were arthropods, Cnidaria and Cephalochordata each accounted for 2 percent, Nematoda and Echinodermata both had 1 percent, and the other seven groups contained 2 percent, collectively. For the three major phyla, species that were numerically dominant in one or more of the base-line or control site collections are given in Table 3.

All station data for richness, quantitative abundance, diversity ( $H'$ ), and equitability ( $J'$ ) were tabulated by base-line, control, and experimental sample categories (Tables 4, 5, and 6). Graphic analyses of Morisita's Index and stability are given in Appendixes D, E, and F.

Table 3. Species in dominant phyla (listed alphabetically) that were numerically abundant at one or more base-line or control stations offshore Panama City Beach, Florida, November 1974 to November 1977.

#### MOLLUSCA

*Acteocina candel*  
*Cylichnella bidentata*  
*Diastoma varium*  
*Ervilia concentrica*  
*Lepton* sp.  
*Lucina multilineata*

*Natica pusilla*  
*Periploma margaritaceum*  
*Pitar simpsoni*  
*Strigilla mirabilis*  
*Tellina texana*  
*Tellina versicolor*

#### ANNELIDA

*Armandia agilis*  
*Armandia maculata*  
*Brania wellfleetensis*  
*Ceratonereis irritabilis*  
*Chone* sp.  
*Dispio uncinata*  
*Eteone lactea*  
*Glycera americana*  
*Goniada littorea*  
*Haploscoloplos foliatus*  
*Lumbrineris cruzensis*  
*Lumbrineris tenuis*  
*Lumbrineris tetraodon*  
*Magelona riojai*  
*Magelona* sp.  
*Mesochaetopterus longitarsus*

*Nephtys buccera*  
*Nephtys picta*  
*Onuphis eremita oculata*  
*Onuphis nebulosa*  
*Owenia fusiformis*  
*Paraonis lyra*  
*Paraonis fulgens*  
*Paraprionospio pinnata*  
*Prionospio cristata*  
*Rullierineris mexicana*  
*Scolelepis texana*  
*Scoloplos armiger*  
*Spio pettiboneae*  
*Spiophanes bombyx*  
Unidentified Oligochaete

#### ARTHROPODA

*Acanthohaustorius* sp.  
*Albunea paretii*  
*Ampelisca abdita*  
*Ampelisca verrilli*  
*Cyclaspis varians*  
*Cyclaspis* sp.  
*Erichthonius* sp.  
*Lepidactylus* sp.

*Monoculodes* sp.  
*Oxyurostylis smithi*  
*Processa hemphilli*  
*Protohaustorius* sp.  
*Pseudohaustorius* sp.  
*Pseudoplatyschnopus* sp.  
*Syncheildium* sp.  
Unidentified Ostracod

Table 4. Species richness, abundance, diversity ( $H'$ ), and equitability ( $J'$ ) and base-line stations offshore Panama City Beach, Florida, November 1974 to July 1976.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m <sup>2</sup> (No.)	$H'$	$J'$
A	Nov. 1974	4	15	2,064	1.9	0.7
	Feb. 1975		27	3,008	2.2	0.7
	May 1975		41	4,784	2.8	0.8
	Aug. 1975		43	3,888	3.1	0.8
	Avg.		32	3,436	2.5	0.8
	Range		15 to 43	2,064 to 4,784	1.9 to 3.1	0.7 to 0.8
B	Nov. 1974	4	27	3,808	1.9	0.6
	Feb. 1975		26	3,984	2.3	0.7
	May 1975		28	5,344	2.3	0.7
	Aug. 1975		47	5,248	3.0	0.8
	Avg.		32	4,596	2.4	0.7
	Range		26 to 47	3,808 to 5,344	1.9 to 3.0	0.6 to 0.8
1	Apr. 1976	32	67	1,506	2.5	0.6
	June 1976	36	94	1,902	3.5	0.8
	July 1976	36	120	7,178	3.1	0.6
	Avg.		94	3,529	3.0	0.7
	Range		67 to 120	1,506 to 7,178	2.5 to 3.5	0.6 to 0.8
	Overall					
	Avg.		49	3,883	2.6	0.7
	Range		15 to 120	1,506 to 7,178	1.9 to 3.5	0.6 to 0.8

Table 5. Species richness, abundance, diversity (H'), and equitability (J') at control stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m <sup>2</sup> (No.)	H'	J'
1	10 Aug. 1976	16	72	5,576	2.4	0.6
	18 Aug. 1976		80	5,500	2.8	0.6
	24 Aug. 1976		84	4,836	2.9	0.6
	1 Sept. 1976		74	3,080	2.9	0.7
	8 Sept. 1976		83	2,260	3.4	0.8
	21 Sept. 1976		89	3,128	3.0	0.7
	4 Oct. 1976		87	3,116	3.3	0.7
	18 Oct. 1976		77	3,912	2.6	0.6
	1 Nov. 1976		67	3,020	2.6	0.6
	1 Dec. 1976		74	3,080	3.0	0.7
	5 Jan. 1977		56	1,724	3.0	0.8
	2 Feb. 1977		53	1,516	3.1	0.8
	1 Mar. 1977		64	2,360	3.1	0.7
	1 Apr. 1977		57	2,632	3.1	0.8
	2 May 1977		55	2,572	2.7	0.7
	1 June 1977		55	1,976	3.3	0.8
	5 July 1977		64	3,264	3.1	0.7
	2 Aug. 1977		80	5,168	3.0	0.7
	1 Sept. 1977		70	3,572	2.9	0.7
	3 Oct. 1977		64	2,112	2.8	0.7
	1 Nov. 1977		72	2,904	3.0	0.7
Avg.		70	3,205	3.0	0.7	
Range		53 to 89	1,515 to 5,576	2.4 to 3.3	0.6 to 0.8	
1	11 Jul. 1977	40	99	3,365	3.2	0.7
2	15 Jul. 1977	40	112	3,750	3.4	0.7
3	25 Jul. 1977	40	105	4,326	3.2	0.7
4	26 Jul. 1977	40	74	4,050	2.9	0.7
5	27 Jul. 1977	40	57	1,408	3.0	0.7
6	28 Jul. 1977	40	66	2,483	3.0	0.7
Avg.		86	2,817	3.1	0.7	
Range		57 to 112	1,408 to 4,326	2.9 to 3.4	0.6 to 0.8	
<u>Overall</u>						
Avg.			74	3,119	3.0	0.7
Range			53 to 112	1,408 to 5,576	2.4 to 3.4	0.6 to 0.8



Table 6. Species richness, abundance, diversity (H'), and equitability (J') at experimental stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m <sup>2</sup> (No.)	H'	J'
1	10 Aug. 1976	16	20	324	2.0	0.7
	18 Aug. 1976		38	976	2.2	0.6
	24 Aug. 1976		60	2,136	2.6	0.6
	1 Sept. 1976		38	1,612	2.1	0.6
	8 Sept. 1976		47	1,344	2.7	0.7
	21 Sept. 1976		45	924	2.9	0.8
	4 Oct. 1976		85	2,440	3.7	0.8
	18 Oct. 1976		46	1,124	2.9	0.8
	1 Nov. 1976		55	2,044	2.5	0.6
	1 Dec. 1976		54	3,540	2.3	0.6
	5 Jan. 1977		36	2,192	1.8	0.5
	2 Feb. 1977		44	2,212	1.9	0.5
	1 Mar. 1977		62	3,732	2.6	0.6
	1 Apr. 1977		52	3,144	2.2	0.6
	2 May 1977		54	1,656	2.8	0.7
	1 June 1977		69	3,256	3.2	0.8
	5 July 1977		49	1,964	2.7	0.7
	2 Aug. 1977		70	2,920	3.2	0.8
	1 Sept. 1977		32	440	2.9	0.8
	3 Oct. 1977		61	1,588	3.1	0.8
	1 Nov. 1977		54	1,220	2.9	0.7
Avg. Range		51 20 to 85	1,942 324 to 3,732	2.6 1.8 to 3.7	0.7 0.5 to 0.8	
1	11 July 1977	40	81	2,422	2.9	0.7
2	15 July 1977	40	114	3,862	3.5	0.7
3	25 July 1977	40	98	4,037	3.3	0.7
4	26 July 1977	40	94	2,587	3.4	0.8
5	27 July 1977	40	80	2,644	2.9	0.7
6	28 July 1977	40	83	3,034	3.4	0.8
Avg. Range		92 80 to 114	3,101 2,422 to 4,037	3.2 2.9 to 3.5	0.7 0.7 to 0.8	
<u>Overall</u>						
Avg. Range			60 20 to 114	2,200 324 to 4,037	2.8 1.8 to 3.7	0.7 0.5 to 0.8

a. Richness. The data from base-line and control samples indicate that species richness followed an irregular seasonal pattern. Generally, numbers of species were lowest in a period between late fall and spring, and showed one or more peaks sometime between midsummer and late fall.

For base-line collections (Table 4), the number of species per sample averaged 49 and ranged between 15 (November) and 120 (July). The average for control samples was 74 and ranged between 53 (February) and 112 (July). Intermediate values were recorded for experimental samples. In these collections, average number of species per sample was 60; the low, which was only 20, occurred in the first collection after dredging; the high was 114, recorded in July 1 year later.

On a date-to-date comparison at station 1 and stations 1 to 6, richness data for control and experimental samples (Tables 5 and 6) gave somewhat conflicting results. For time-sequence samples at station 1, richness data showed incomplete borrow pit recovery as numbers of species prove to be consistently higher for controls on every occasion except 1 June 1977. This was reflected in the average of 70 and the range between 53 and 89 for control samples, as opposed to an average of 51 and a range of 20 to 85 for experimental samples. Even so, a degree of recovery was evident at station 1 a few weeks after dredging, and richness data for control and experimental samples first approximated one another by October 1976. Species recorded in the early stages of recovery at station 1 are of special interest because they include survivors, migrators, and perhaps the first recruits (Table 7).

Contrary to indications of the incomplete recovery discussed above, results for richness in the one-time sampling at stations 1 to 6 showed that borrow pits generally supported more species than undredged bottom at 1 year. This was true for stations 2, 4, 5, and 6. Findings at station 1 were contradictory, and at station 3, species in experimental collections were outnumbered by those in control collections. The number of species in control samples averaged 86 and ranged between 57 and 112; the number for experimental samples was higher with an average of 92 and a range between 80 and 114.

Even though richness data are somewhat inconsistent, overall they indicate that faunal recovery began rapidly and was virtually complete throughout the study area in about 1 year. Data from the one-time sampling at six stations support this statement to a greater degree than those from regular time-sequence samples at station 1.

b. Abundance. Except for a few anomalies, seasonal cycles of faunal abundance coincided with periods of low and high species diversity, i.e., fewer animals were recorded in winter collections, and peak numbers generally occurred at various times between March and December. In base-line samples, numbers of individuals per square meter of bottom averaged 3,883 and ranged from 1,506 (April) to 7,178 (July). The average for control samples was 3,119, with a range between 1,408 (July) and 5,576 (August). Experimental samples had an

Table 7. Species and their frequency of occurrence in the first 3 weeks after dredging at station 1 offshore Panama City Beach, Florida, August 1976.

Species	No. of individuals (by date)			Species	No. of individuals (by date)		
	10 Aug.	18 Aug.	24 Aug.		10 Aug.	18 Aug.	24 Aug.
<b>CHIDARIA</b>				<b>ANNELIDA (Cont'd)</b>			
Unid. sp.			1	<i>Polydora tetrabranchia</i>		1	
<b>PLATYHELMINTHES</b>				<i>Prionospio cristata</i>	43		114
Unid. sp.			2	<i>Rullierieris mexicana</i>			1
<b>NEMETINEA</b>				<i>Scoloplos armiger</i>	1	7	21
Unid. sp.	1	3	9	<i>Scoloplos rubra</i>			1
<b>HEMATOCA</b>				<i>Spio pettibonense</i>			19
Unid. sp.	2	3	1	<i>Spio phanias bombyx</i>			1
<b>BRANCHIOPODA</b>				<b>SIPUNCULIDA</b>			
<i>Glyptothorax pyramidalis</i>			1	<i>Golfingia trichoscephala</i>	1		
<b>MOLLUSCA</b>				<b>ARTERPODA</b>			
<i>Caecum faridensis</i>	1		1	<i>Acanthohauastorius</i> sp.			1
<i>Cardiomya costellata</i>			1	<i>Ampelisca abdita</i>	1		1
<i>Lepton</i> sp.			4	<i>Ampelisca verrilli</i>	3		27
<i>Lucina multilineda</i>			1	<i>Monoculodes</i> sp.	1		
<i>Periphaea margaritaceum</i>			1	<i>Prothauastorius</i> sp.	4		1
<i>Pitar simplex</i>			3	<i>Pseudohauastorius</i> sp.	1		31
<i>Strigilla mirabilis</i>			2	<i>Synchelidium</i> sp.	1		1
<i>Tellina texana</i>	12	18	23	<i>Albunea paretii</i>	3		1
<i>Tellina varicolor</i>				<i>Callianassa jamaicensis</i>			1
<b>ANNELIDA</b>				<i>Petrochirus diogenes</i>			1
Unid. Oligochaete			2	<i>Petrolisthes galanthus</i>			1
<i>Ampelisca maculata</i>	1		1	<i>Pinnixa retinens</i>			1
<i>Armandia maculata</i>	1		1	<i>Processa vicina</i>	1		1
<i>Brania velifera</i>	1		1	<i>Cyclaspis</i> sp.			1
<i>Capitellidae</i> Jonesi	1		1	<i>Cyclaspis varians</i>	4		2
<i>Caulerella</i> sp.	1		1	<i>Oxyurostylis smithi</i>	5		3
<i>Ceratonereis irritabilis</i>			1	<i>Nebalia</i> sp.	1		1
<i>Diapatra cuprea</i>			1	Unid. Mysid	2		1
<i>Eteone lactea</i>	1		1	Unid. Ostracod			1
<i>Eulella sanguinea</i>			1	<i>Penaeus duorarum</i>			
<i>Glycera americana</i>	1		1	<i>Stacyonia brevirostris</i>	1		
<i>Glycera dibranchiata</i>			1	<i>Stacyonia typica</i>			
<i>Glycera</i> sp.			1	<i>Acanthosquilla blumienalis</i>	1		
<i>Glycyde solitaria</i>	1		1	<b>ECHINODERMATA</b>			
<i>Goniada littorea</i>	1		1	<i>Leptosynapta</i> sp.			1
<i>Gyptis vittata</i>	1		1	<i>Metilia quinquesperforata</i>			
<i>Haploscoloplos foliosus</i>			170	Unid. Ophiuroid	2		1
<i>Lumbrineris cruzensis</i>	3	113	13	<b>HEMICHORDATA</b>			
<i>Meloboris indicus</i>			3	Unid. Enteropneust	1		
<i>Mesochestopterus sagittarius</i>			1	<b>CEPHALOCORDATA</b>			
<i>Nephtys pecta</i>			1	<i>Branchiostoma floridae</i>	2	32	11
<i>Onuphis a. eculaza</i>			1	<b>VERTEBRATA</b>			
<i>Onuphis nebulosa</i>	4		1	<i>Lepophidium gracilis</i>			1
<i>Paranoides species</i>			2	<i>Symphurus</i> sp.	1		
<i>Paranoides lyra</i>			2				
<i>Paronis fulgens</i>			2				
<i>Paraprionospio pinnata</i>			2				
<i>Phyllodoce areata</i>			2				
			6				
				<b>TOTAL SPECIES/INDIVIDUALS</b>	<b>20/81</b>	<b>38/24</b>	<b>60/534</b>

average of 2,200, with a range between 324 (immediately after dredging), and 4,037 1 year following dredging.

Results of periodic sampling at station 1 showed that numbers of individuals within the borrow pit first reached control sample abundance in December 1976, or about 3 months after dredging had been completed. From that time through the next four sampling periods, individuals in experimental samples were more numerous than in control samples. In May, abundance values were reversed, then again favored the experimental sample in June but remained higher in controls until collecting terminated in November 1977. Thus, a pattern of abundance indicative of faunal recovery within 3 months did not occur the following summer and fall seasons.

At stations 1 to 6, one-time sampling in July neither confirmed nor refuted evidence of recovery from time-sequence sampling at station 1. Numbers of individuals were higher in control samples at stations 1, 3, and 4, while abundance values were higher in experimental samples at stations 2, 5, and 6. A comparison of averages and ranges showed that the average number of individuals per square meter was higher for experimental samples. The low for experimental collections was well above that of control samples, and the high for experimental samples was comparable to the high for control samples. In summary, abundance values demonstrated rapid initial faunal recovery in the borrow pits that was practically complete after about 12 months.

c. Diversity ( $H'$ ) and Equitability ( $J'$ ). For comparable pairs of control and experimental samples, species richness and abundance data were converted statistically to provide an index of diversity ( $H'$ ) that was used to numerically determine degrees of difference between faunal communities in undredged bottom and borrow pits. Observed differences were validated for each sample set by calculating equitability ( $J'$ ), which is a mathematical measurement of how evenly organisms in a sample are divided among the various species represented (Pielou, 1975). Used in combination, values of  $H'$  and  $J'$  for base-line and control samples were regarded normal. For experimental samples, lesser values of  $H'$  and  $J'$  were attributed to dredging effects, and equal or higher values were considered evidence of faunal recovery. In base-line samples, values for both parameters were slightly higher in summer months, but control samples at station 1 showed no seasonal trend.

Average values for  $H'$  and  $J'$  in base-line samples were 2.6 and 0.7 respectively, with  $H'$  ranging from 1.9 to 3.5 and  $J'$  ranging from 0.6 to 0.8. Average  $H'$  in control samples was a little higher than base-line but  $J'$  was the same and ranges of both were within base-line limits. Among experimental collections, average  $H'$  was 2.8 and ranged between 1.8 and 3.7. The average for  $J'$  was the same as for base-line and control samples, but the low was 0.5 and the high was 0.8. Lowest values for  $H'$  and  $J'$  were recorded in January and February, and may have been a result of low water temperature as well as dredging.

When  $H'$  and  $J'$  values for control and experimental samples taken on the same data were compared, the results showed little regularity. In the series from

station 1, the first experimental sample to equal or surpass control values of  $H'$  and  $J'$  was collected in October, about 2 months after dredging. From that time until November of the next year, only 5 of 14 experimental samples showed evidence of faunal recovery. Recovery was demonstrated somewhat better by  $H'$  and  $J'$  data from the six stations sampled in July 1977. At four borrow pit stations, experimental samples had the same or higher diversity and equitability values than control samples. Also, average  $H'$  for experimental samples was higher than that for control samples, and averages of  $J'$  were the same inside and outside borrow pits.

A review of diversity and equitability results suggests the following: (1) the benthos off Panama City Beach exhibited an annual cycle in which species diversity and abundance were greater in warm water months than in winter; (2) faunal recovery in the borrow pit at station 1 was evident to a considerable degree within 2 to 3 months after dredging, and became nearly complete by the end of sampling in November 1977; and (3) faunal recovery also occurred within 1 year of dredging in at least half of the six borrow pits sampled. To further test these inferences, sets of biotic data from control and experimental samples were evaluated using Morisita's index of faunal similarity and stability analyses. Morisita's index was first used to develop similarity matrices (App. D), and then to perform a classification analysis that arranged control and experimental samples in the form of a dendrogram according to their various degrees of likeness (App. E). Two stability analyses were made (App. F). The first shows the amount of sample variation among the control and experimental samples when compared to the centroid of the statistical faunal cluster calculated from all base-line and control data. The second shows time to faunal recovery by plotting experimental sample data against the nearest mathematical edge of the same statistical cluster.

d. Morisita's Index. Similarity matrices were calculated and displayed for time-sequence samples from station 1, and for one-time collections at stations 1 to 6 (App. D). A regular pattern of light cells (no similarity) and dark cells (high similarity) was not evident because 45 percent or more of station-to-station comparisons in both values had faunal overlap of at least 50 percent. For additional clarification, the same data were used to generate a classification analysis for presentation as a cluster diagram (App. E). In performing the necessary calculations, a Q-mode (normal) analysis was made to show faunal relationships on a station-to-station basis; no data transformations were made because doing so would obscure the dominant ranking of any faunal elements in the samples; and group averaging was selected as the sorting strategy.

For time-sequence samples, the first five (1 September 1977-experimental to 10 August 1976-experimental) show very little similarity to any other samples and were therefore considered unrelated, or outliers. These outliers include two summer-fall experimental samples taken 1 year after dredging, two similar winter collections taken about 6 months after dredging, and the first experimental sample taken a few days after the dredging. The interpretation here is that the two experimental samples 1 year after dredging are as unrelated to other samples

as the one taken immediately after dredging and the two taken in winter during the presumed period of least faunal diversity and abundance.

The next group is the first cluster and has five samples (1 April 1977-experimental to 2 May 1977-experimental). These are related by season (spring), and consist of a base-line sample and control and experimental samples collected 8 to 9 months after dredging. This mixture, and close correspondence between control and experimental samples suggests that community recovery has occurred within the borrow pit at station 1.

Then there is a single, odd sample with no close associates (1 November 1977-experimental), followed by the second cluster which contains eight samples (4 October 1976-experimental to 3 October 1977-experimental). Except for the two control samples, this group represents the experimental samples in the fall during the first 3 months after dredging.

Cluster three is considered the opposite of cluster two. It has seven samples (10 August 1976-control to 2 August 1977-control); five are post-dredging late summer and fall control samples; one a preconstruction control sample from July; and one a winter experimental sample.

Cluster four is the largest grouping and contains the next 15 samples (1 September 1977-control to 1 November 1977-control); 8 of these are fall control samples and closely associated with experimental samples taken as soon as 2 weeks after dredging, as well as in various other months. Here, the indication is that recovery at station 1 began very quickly after dredging.

The fifth and last cluster contains six samples (1 June 1977-control to 11 July 1977-experimental), which are equally divided among summer control and experimental samples taken about 1 year after dredging. Similarities between clusters one and five provide substantial evidence of faunal recovery over a postconstruction period of 8 to 11 months.

For the one-time sampling at six stations, control and experimental collections all show a high level of faunal affinity and therefore support cluster data from station 1 showing a recovery time of 1 year or less. At the time these samples were taken, the diagram shows that station location east to west along the coast was a greater clustering factor than whether or not a sample came from a dredged or undredged bottom. This is not surprising considering the daily discharge of estuarine water through West Pass and into nearshore waters at the eastern end of the study area.

e. Stability Analyses. In the first analysis, control and experimental samples are represented along the x-axis according to the number of days before and after dredging (see App. F). The y-axis is a scale of increasing distance from a statistically determined centroid, or midpoint within a community cluster represented mathematically and calculated from all available base-line and

control data. This graph shows a large variation occurring in control and experimental samples, and at corresponding times, both appear about equally distant from the centroid--distance to maximum community stability. In other words, control samples did not show close connections to the centroid, nor did they follow a seasonal or any other discernible pattern in relation to that point. Likewise, experimental samples showed no definite postconstruction deviation from the centroid, and followed no subsequent trend that might have indicated recovery. In fact, when respective sample distances from the centroid were compared in a Mann-Whitney U-Test, it was found that variations among control and experimental samples were statistically indistinguishable. The point emphasized by this analysis is that faunal variation was a major feature of both control and experimental samples.

In the second graph, the y-axis scale (labeled distance to cluster edge) refers to the edge of the statistical community (to a 95-percent confidence level) that has the centroid as its midpoint (App. F). The zero point on the scale represents the nearest edge of the community, higher positive values are increasing distances from the edge, and negative values show that the experimental sample falls inside the cluster about the centroid and cannot be statistically separated from it. Experimental samples along the x-axis are arranged by day number in postdredging sequence. The x-y plots show that an experimental sample first touched the edge of the centroid cluster on day 332 (5 July 1977), about 11 months after dredging was completed at station 1. This intersection of an experimental sample with the zero line represents time to faunal recovery. However, in several later samples, the plot again falls outside the cluster edge, and does not return until October, 14 months after dredging and 1 month before sampling ended. This situation may be due to normal sample variation.

## VI. CONCLUSIONS AND DISCUSSION

Study results indicate several general conclusions related to hydrology, sediments, and benthic fauna of borrow pits and undredged adjacent bottom. Hydrological measurements included temperature and salinity, recorded quarterly at stations A and B in 1974 and 1975, and monthly at station 1 during a 20-month period between April 1976 and November 1977. Temperature data showed that regular seasonal changes are subject to rather wide year-to-year variations. Summer temperature was the most consistent, but in spring, fall, and winter, observed yearly differences were on the order of 10° Celsius. In part, fluctuations of this magnitude could conceivably mediate events responsible for changes in benthic diversity and abundance recorded in base-line, control, and experimental samples.

Salinity was characteristically high (above 32 parts per thousand); however, a low value of 26 parts per thousand, recorded in August 1975, showed that the study area may at times be influenced by estuarine water masses from St. Andrew Bay and perhaps other areas as well (Salsman and Ciesluk, 1978). As with temperature, such periodic change could be translated into adjustments in community structure. In the case of salinity, however, the effects might be

more than physiological, as foreign water masses would undoubtedly introduce a variety of immigrant organisms and potential community recruits.

A comparison of sediments from undredged bottom and borrow pits showed that most deviations from normal properties appeared in experimental samples. Major sedimentological differences could be identified due to accumulation of loosely packed, darker, and siltier sediments in the pits shortly after dredging. These distinctions became more subtle with time, and by the following year, the surface samples (in nearly filled pits) were very similar to sediments on the adjacent undisturbed sea floor. When compared to base-line samples, specific differences included the following: (1) lower sand content, (2) higher silt-clay content, (3) poorer sorting, (4) more finely skewed, (5) more variation in both directions from a leptokurtic condition, and (6) higher content of organic carbon.

In the borrow pit at station 1, altered sediment texture was confirmed by divers, and bathymetric changes were recorded over time. Depth of the cut was 3 to 5 meters below the sea floor, and sediment at the bottom initially appeared dark, soft, and silty. Within a few months this material was covered by fine sand. By the end of sampling in November 1977, the pit had filled to within a meter of the surrounding bottom. A final visual impression was that sediments were still finer and darker, but no distinction could be made between epibenthic and pelagic marine life inside and outside the borrow pit.

Dredging caused an immediate decline in the bottom community followed by a rapid postconstruction recovery that was virtually complete after 1 year. This, or even a shorter recovery period of 8 to 9 months, was supported by analyses that included: (1) species richness, (2) abundance of individuals, (3) diversity and equitability indexes, (4) Morisita's index of faunal similarity, and (5) stability analyses. It is important to again note that sampling beyond 1 year indicated lack of complete faunal recovery. This may be true, or these samples may merely be representative of large natural environmental variations that were shown to be an inherent characteristic of the shallow coastal system off Panama City Beach.

On the basis of data presented here, and complementary studies by Saloman (1976) and Culter and Mahadevan (1982), it is evident that dredging done at Panama City Beach has had no adverse long-term effect on bottom dwelling invertebrates, sediments, or water quality either along the shore or in offshore borrow areas. Short-term ecological consequences of dredging were shown to last only about 1 year, and included only minor sedimentological changes and only a small decline in diversity and abundance among bottom dwelling invertebrates. This lack of evident protracted environmental alteration is due to factors related to physical and biological oceanography within the dredging and disposal areas, and to certain engineering features of the beach restoration project. The natural factors would include the following regional characteristics: (1) moderate to high wave energy capable of eroding and transporting large volumes of sediment annually, (2) tidal, longshore, offshore, and storm generated currents that have



the same, or greater, capability of transporting nearshore sediments, (3) a geographic location that is regularly influenced by water masses and marine life of estuarine, coastal, and oceanic origins, (4) a native infauna that is diversified, abundant, and well adapted to substrate disruption and movement, and (5) a fauna that is composed of subtropical and temperate species whose active reproductive periods are limited by low water temperatures normally recorded in only 1 or 2 winter months.

As for features of the dredging project, numerous small borrow areas were used, instead of fewer larger ones, and they were dredged only to a depth of about 5 meters or less. At this level, no strata of silt, clay, or rock were uncovered so that sediment type in dredged areas remained very much like sediment in undredged areas. Also, dredging occurred in fairly shallow water where sediment transport supplied the volume of sand required to rapidly fill the borrow pits. In this connection, it is important to mention that because of their fast filling rate, and the normally low concentration of suspended solids in overlying water, no biologically detrimental quantities of silt and clay size particles accumulated in borrow areas off Panama City Beach. If anything, during the recovery period, data support the theory that within borrow pits a relative decrease in turbulence and a slight increase in organic deposits may have been responsible for figures showing a higher diversity and abundance of infauna in some dredged areas compared to figures for bottom left undisturbed.

In general, results of coastal restoration studies at Panama City Beach agree with findings for similar projects in comparable surroundings (Thompson, 1973), and along with more recent work (Turbeville and Marsh, 1982), provide additional information that can be used both locally and elsewhere to more accurately predict and evaluate environmental effects of beach nourishment operations. Nevertheless, since each coastal and estuarine area has certain unique features, it is important to continue a close association between ecological research and coastal engineering. Ideally, the research should be conducted to collect base-line data, proceed during all phases of construction, and continue after project completion for a sufficient period of time to obtain short-term (1 year) and long-term data (2 years or longer). In all instances major research emphasis should at least include: (1) factors related to geographic and meteorological conditions, (2) sedimentology, (3) water quality, (4) hydrodynamics, (5) resident and migratory biota at the bottom and throughout the water column, (6) interactions between biotic and abiotic elements, and (7) socioeconomic circumstances. By using such a research-oriented approach in future engineering projects, many important coastal resources could be protected, or even enhanced, and most environmental problem areas would be identified and avoided.

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## APPENDIX A

### HYDROLOGICAL AND SEDIMENT DATA BY STATION

Hydrological and sedimentological data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

HYDROLOGICAL AND SEDIMENTOLOGICAL DATA, BY STATION AND DATE, FOR  
OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING -  
BEACH RESTORATION PROJECT, PANAMA CITY BEACH, FLORIDA (NOVEMBER  
1974 TO NOVEMBER 1977).

STATION A - CONTROL

PARAMETER	DATE				MEAN	RANGE	
	11/74	2/75	5/75	8/75			
HYDROLOGICAL							
SALINITY, ‰	34.500	34.390	32.220	26.220	31.832	26.22 TO	34.50
WATER TEMP., C	21.000	17.400	26.200	28.300	23.225	17.40 TO	28.30
SEDIMENT							
GRANULE, WT.%	99.861	99.892	99.826		99.860	99.83 TO	99.89
SAND	0.139	0.108	0.174		0.140	0.11 TO	0.17
SILT							
CLAY							
MEAN GRAIN SIZE, #	2.203	2.294	2.433		2.310	2.20 TO	2.43
ST. DEVIATION, #	0.715	0.595	0.499		0.603	0.50 TO	0.71
SKEWNESS	-0.156	-0.246	-0.199			-0.25 TO	-0.16
KURTOSIS	1.014	1.145	1.227		1.129	1.01 TO	1.23
T. CARBON, WT.%	0.113	0.144	0.080	0.070	0.102	0.07 TO	0.14
T. ORGANIC C	0.081	0.024	0.047	0.050	0.050	0.02 TO	0.08
T. CARBONATE C	0.032	0.120	0.033	0.020	0.051	0.02 TO	0.12

STATION B - CONTROL

PARAMETER	DATE				MEAN	RANGE	
	11/74	2/75	5/75	8/75			
HYDROLOGICAL							
SALINITY, ‰	34.330	33.890	32.170	26.110	31.625	26.11 TO	34.33
WATER TEMP., C	20.800	17.500	26.000	28.500	23.200	17.50 TO	28.50
SEDIMENT							
GRANULE, WT.%		0.502			0.502	0.50 TO	0.50
SAND	99.871	99.341	100.000	99.886	99.774	99.34 TO	100.00
SILT	0.129	0.157		0.114	0.133	0.11 TO	0.16
CLAY							
MEAN GRAIN SIZE, #	2.213	2.169	2.330	2.447	2.290	2.17 TO	2.45
ST. DEVIATION, #	0.802	0.744	0.562	0.554	0.665	0.55 TO	0.80
SKEWNESS	-0.236	-0.382	-0.234	-0.059		-0.38 TO	-0.09
KURTOSIS	1.262	1.177	1.134	1.376	1.237	1.13 TO	1.38
T. CARBON, WT.%	0.106	0.334	0.082		0.174	0.08 TO	0.33
T. ORGANIC C	0.084	0.114	0.008		0.069	0.01 TO	0.11
T. CARBONATE C	0.022	0.220	0.074		0.105	0.02 TO	0.22

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

PARAMETER	DATE			MEAN	RANGE	
	4/76	6/76	7/76			
HYDROLOGICAL						
SALINITY, ‰	33.330	32.330	33.280	32.980	32.33 TO	33.33
WATER TEMP., C	20.200	25.700	23.000	24.633	20.20 TO	28.00
SEDIMENT						
GRANULE, WT.%	0.156			0.156	0.16 TO	0.16
SAND	99.836			99.836	99.84 TO	99.84
SILT	0.008			0.008	0.01 TO	0.01
CLAY						
MEAN GRAIN SIZE, #	2.407			2.407	2.41 TO	2.41
ST. DEVIATION, #	0.470			0.470	0.47 TO	0.47
SKEWNESS	0.020			0.020	0.02 TO	0.02
KURTOSIS	1.228			1.228	1.23 TO	1.23
T. CARBON, WT.%	0.269			0.269	0.27 TO	0.27
T. ORGANIC C	0.032			0.032	0.03 TO	0.03
T. CARBONATE C	0.237			0.237	0.24 TO	0.24

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/10/76	DATE - EXPERIMENTAL 8/10/76
HYDROLOGICAL		
SALINITY, ‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT. %		99.056
SAND		0.144
SILT		
CLAY		
MEAN GRAIN SIZE, #		2.481
ST. DEVIATION, #		0.411
SKEWNESS		-0.137
KURTOSIS		1.017
T. CARBON, WT. %		0.347
T. ORGANIC C		0.336
T. CARBONATE C		0.011

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/18/76	DATE - EXPERIMENTAL 8/18/76
HYDROLOGICAL		
SALINITY, ‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT. %		0.271
SAND		99.418
SILT		0.311
CLAY		
MEAN GRAIN SIZE, #		2.493
ST. DEVIATION, #		0.530
SKEWNESS		-0.067
KURTOSIS		1.436
T. CARBON, WT. %		0.308
T. ORGANIC C		0.300
T. CARBONATE C		0.008

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/24/76	DATE - EXPERIMENTAL 8/24/76
HYDROLOGICAL		
SALINITY, ‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT. %		0.063
SAND		99.634
SILT		0.303
CLAY		
MEAN GRAIN SIZE, #		2.501
ST. DEVIATION, #		0.458
SKEWNESS		0.024
KURTOSIS		1.209
T. CARBON, WT. %		0.361
T. ORGANIC C		0.177
T. CARBONATE C		0.184

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 9/1/76	DATE - EXPERIMENTAL 9/1/76
HYDROLOGICAL		
SALINITY, ‰	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT. %	0.187	
SAND	99.672	97.108
SILT	0.141	2.892
CLAY		
MEAN GRAIN SIZE, $\phi$	2.323	2.747
ST. DEVIATION, $\phi$	0.558	0.587
SKEWNESS	-0.281	0.285
KURTOSIS	1.189	1.115
T. CARBON, WT. %	0.348	1.123
T. ORGANIC C	0.100	0.039
T. CARBONATE C	0.248	1.084

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 9/8/76	DATE - EXPERIMENTAL 9/8/76
HYDROLOGICAL		
SALINITY, ‰	32.610	32.610
WATER TEMP., C	27.800	27.809
SEDIMENT		
GRANULE, WT. %		
SAND		99.776
SILT		0.224
CLAY		
MEAN GRAIN SIZE, $\phi$		2.508
ST. DEVIATION, $\phi$		0.507
SKEWNESS		-0.015
KURTOSIS		1.348
T. CARBON, WT. %		0.302
T. ORGANIC C		0.257
T. CARBONATE C		0.045

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 9/21/76	DATE - EXPERIMENTAL 9/21/76
HYDROLOGICAL		
SALINITY, ‰	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT. %		
SAND		91.896
SILT		8.104
CLAY		
MEAN GRAIN SIZE, $\phi$		2.835
ST. DEVIATION, $\phi$		0.736
SKEWNESS		0.340
KURTOSIS		1.070
T. CARBON, WT. %		2.318
T. ORGANIC C		0.462
T. CARBONATE C		1.856

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/24/76	DATE - EXPERIMENTAL 10/24/76
HYDROLOGICAL		
SALINITY, ‰/0	33.060	33.060
WATER TEMP., C	24.900	24.900
SEDIMENT		
GRANULE, WT. %		0.092
SAND		99.626
SILT		0.283
CLAY		
MEAN GRAIN SIZE, Ø		2.452
ST. DEVIATION, Ø		0.481
SKEWNESS		-0.165
KURTOSIS		1.202
T. CARBON, WT. %		0.281
T. ORGANIC C		0.187
T. CARBONATE C		0.094

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/18/76	DATE - EXPERIMENTAL 10/18/76
HYDROLOGICAL		
SALINITY, ‰/0	33.060	33.060
WATER TEMP., C	24.900	24.900
SEDIMENT		
GRANULE, WT. %		98.611
SAND		1.389
SILT		
CLAY		
MEAN GRAIN SIZE, Ø		2.536
ST. DEVIATION, Ø		0.411
SKEWNESS		0.155
KURTOSIS		1.068
T. CARBON, WT. %		0.722
T. ORGANIC C		0.700
T. CARBONATE C		0.072

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 11/1/76	DATE - EXPERIMENTAL 11/1/76
HYDROLOGICAL		
SALINITY, ‰/0	33.170	33.170
WATER TEMP., C	18.000	18.000
SEDIMENT		
GRANULE, WT. %		0.108
SAND		98.769
SILT		1.123
CLAY		
MEAN GRAIN SIZE, Ø		2.507
ST. DEVIATION, Ø		0.536
SKEWNESS		-0.042
KURTOSIS		1.492
T. CARBON, WT. %		0.519
T. ORGANIC C		0.316
T. CARBONATE C		0.203

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 12/1/76	DATE - EXPERIMENTAL 12/1/76
HYDROLOGICAL		
SALINITY, ‰	34.060	34.060
WATER TEMP., °C	12.500	12.500
SEDIMENT		
GRANULE, WT. %		0.052
SAND	99.876	99.086
SILT	0.124	0.862
CLAY		
MEAN GRAIN SIZE, φ	2.300	2.524
ST. DEVIATION, φ	0.577	0.471
SKEWNESS	-0.267	0.074
KURTOSIS	1.118	1.225
T. CARBON, WT. %	0.275	0.498
T. ORGANIC C	0.060	0.110
T. CARBONATE C	0.215	0.388

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 1/5/77	DATE - EXPERIMENTAL 1/5/77
HYDROLOGICAL		
SALINITY, ‰	33.280	33.280
WATER TEMP., °C	12.400	12.400
SEDIMENT		
GRANULE, WT. %		0.437
SAND		97.222
SILT		2.341
CLAY		
MEAN GRAIN SIZE, φ		2.518
ST. DEVIATION, φ		0.597
SKEWNESS		-0.037
KURTOSIS		1.664
T. CARBON, WT. %		0.919
T. ORGANIC C		0.327
T. CARBONATE C		0.592

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 2/2/77	DATE - EXPERIMENTAL 2/2/77
HYDROLOGICAL		
SALINITY, ‰	34.330	34.330
WATER TEMP., °C	9.000	9.000
SEDIMENT		
GRANULE, WT. %		0.085
SAND		99.701
SILT		0.215
CLAY		
MEAN GRAIN SIZE, φ		2.499
ST. DEVIATION, φ		0.486
SKEWNESS		-0.036
KURTOSIS		1.295
T. CARBON, WT. %		0.313
T. ORGANIC C		0.298
T. CARBONATE C		0.017



## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 3/1/77	DATE - EXPERIMENTAL 3/1/77
HYDROLOGICAL		
SALINITY, ‰/0	34.440	34.440
WATER TEMP., C	14.300	14.300
SEDIMENT		
GRANULE, WT.%		0.652
SAND		99.265
SILT		0.084
CLAY		
MEAN GRAIN SIZE, $\phi$		2.316
ST. DEVIATION, $\phi$		0.571
SKEWNESS		-0.297
KURTOSIS		1.228
T. CARBON, WT.%		0.253
T. ORGANIC C		0.163
T. CARBONATE C		0.090

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 3/1/77	DATE - EXPERIMENTAL 3/1/77
HYDROLOGICAL		
SALINITY, ‰/0	33.500	33.500
WATER TEMP., C	22.400	22.400
SEDIMENT		
GRANULE, WT.%		0.201
SAND	99.829	99.214
SILT	0.171	0.585
CLAY		
MEAN GRAIN SIZE, $\phi$	2.303	2.487
ST. DEVIATION, $\phi$	0.560	0.414
SKEWNESS	-0.275	-0.103
KURTOSIS	1.140	1.031
T. CARBON, WT.%	0.214	0.339
T. ORGANIC C	0.202	0.328
T. CARBONATE C	0.012	0.011

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 3/2/77	DATE - EXPERIMENTAL 3/2/77
HYDROLOGICAL		
SALINITY, ‰/0	34.800	34.280
WATER TEMP., C	21.800	21.800
SEDIMENT		
GRANULE, WT.%		0.016
SAND		99.801
SILT		0.183
CLAY		
MEAN GRAIN SIZE, $\phi$		2.491
ST. DEVIATION, $\phi$		10.389
SKEWNESS		-0.100
KURTOSIS		0.937
T. CARBON, WT.%		0.244
T. ORGANIC C		0.097
T. CARBONATE C		0.147

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 6/1/77	DATE - EXPERIMENTAL 6/1/77
HYDROLOGICAL		
SALINITY, ‰	32.060	32.060
WATER TEMP., °C	25.700	25.700
SEDIMENT		
GRANULE, WT. %		0.085
SAND		97.964
SILT		1.951
CLAY		
MEAN GRAIN SIZE, Ø		2.356
ST. DEVIATION, Ø		0.677
SKEWNESS		-0.193
KURTOSIS		1.572
T. CARBON, WT. %		1.206
T. ORGANIC C		0.206
T. CARBONATE C		1.000

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 7/5/77	DATE - EXPERIMENTAL 7/5/77
HYDROLOGICAL		
SALINITY, ‰	33.560	33.560
WATER TEMP., °C	27.500	27.500
SEDIMENT		
GRANULE, WT. %	0.335	
SAND	99.422	98.705
SILT	0.244	1.295
CLAY		
MEAN GRAIN SIZE, Ø	2.456	2.507
ST. DEVIATION, Ø	0.453	0.483
SKEWNESS	-0.193	0.034
KURTOSIS	1.195	1.274
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 8/2/77	DATE - EXPERIMENTAL 8/2/77
HYDROLOGICAL		
SALINITY, ‰	35.330	35.330
WATER TEMP., °C	29.000	29.000
SEDIMENT		
GRANULE, WT. %		
SAND		97.489
SILT		2.511
CLAY		
MEAN GRAIN SIZE, Ø		2.529
ST. DEVIATION, Ø		0.463
SKEWNESS		0.161
KURTOSIS		1.201
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 9/1/77	DATE - EXPERIMENTAL 9/1/77
HYDROLOGICAL		
SALINITY, ‰	32.610	32.610
WATER TEMP., C	27.700	27.700
SEDIMENT		
GRANULE, WT. %		96.923
SAND		3.077
SILT		
CLAY		
MEAN GRAIN SIZE, Ø		2.544
ST. DEVIATION, Ø		0.465
SKEWNESS		0.197
KURTOSIS		1.219
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/3/77	DATE - EXPERIMENTAL 10/3/77
HYDROLOGICAL		
SALINITY, ‰	33.060	33.060
WATER TEMP., C	25.000	25.000
SEDIMENT		
GRANULE, WT. %		0.092
SAND		99.597
SILT		0.311
CLAY		
MEAN GRAIN SIZE, Ø		2.491
ST. DEVIATION, Ø		0.505
SKEWNESS		-0.037
KURTOSIS		1.327
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 11/1/77	DATE - EXPERIMENTAL 11/1/77
HYDROLOGICAL		
SALINITY, ‰		
WATER TEMP., C		
SEDIMENT		
GRANULE, WT. %		0.101
SAND		99.163
SILT		0.736
CLAY		
MEAN GRAIN SIZE, Ø		2.551
ST. DEVIATION, Ø		0.516
SKEWNESS		0.075
KURTOSIS		1.282
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.560	33.560
WATER TEMP., °C	27.500	27.500
SEDIMENT		
GRAINULE, WT. %		
SAND	99.700	98.641
SILT	0.300	1.359
CLAY		
MEAN GRAIN SIZE, $\phi$	2.445	2.499
ST. DEVIATION, $\sigma$	0.445	0.525
SKEWNESS	-0.187	-0.001
KURTOSIS	1.178	1.388
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## SUN &amp; SWIM MOTEL (STATION 2) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.560	33.560
WATER TEMP., °C	27.500	27.500
SEDIMENT		
GRAINULE, WT. %		
SAND	99.646	99.796
SILT	0.354	0.204
CLAY		
MEAN GRAIN SIZE, $\phi$	2.452	2.425
ST. DEVIATION, $\sigma$	0.440	0.479
SKEWNESS	-0.179	-0.194
KURTOSIS	1.148	1.205
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## MILTON HOLIDAY INN (STATION 3) - CONTROL &amp; EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.330	33.330
WATER TEMP., °C	26.800	26.800
SEDIMENT		
GRAINULE, WT. %		
SAND	99.879	0.922
SILT	0.121	98.964
CLAY		0.114
MEAN GRAIN SIZE, $\phi$	2.214	1.749
ST. DEVIATION, $\sigma$	0.615	1.064
SKEWNESS	-0.319	-0.460
KURTOSIS	1.109	0.824
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.330	33.330
WATER TEMP., °C	26.800	26.800
SEDIMENT		
GRANULE, WT. %		0.079
SAND	99.859	99.810
SILT	0.141	0.111
CLAY		
MEAN GRAIN SIZE, Ø	2.244	2.006
ST. DEVIATION, Ø	0.608	0.831
SKEWNESS	-0.307	-0.414
KURTOSIS	1.158	0.954
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.330	33.330
WATER TEMP., °C	26.800	26.800
SEDIMENT		
GRANULE, WT. %		
SAND	99.864	99.863
SILT	0.136	0.137
CLAY		
MEAN GRAIN SIZE, Ø	2.305	2.257
ST. DEVIATION, Ø	0.593	0.575
SKEWNESS	-0.331	-0.280
KURTOSIS	1.344	1.111
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, ‰	33.330	33.330
WATER TEMP., °C	26.800	26.800
SEDIMENT		
GRANULE, WT. %		
SAND	99.520	99.757
SILT	0.480	0.106
CLAY		
MEAN GRAIN SIZE, Ø	2.114	2.311
ST. DEVIATION, Ø	0.760	0.612
SKEWNESS	-0.397	-0.340
KURTOSIS	1.092	1.391
T. CARBON, WT. %		
T. ORGANIC C		
T. CARBONATE C		

## APPENDIX B

### CHECKLIST OF ORGANISMS

Checklist of organisms collected at offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

CHECKLIST OF ORGANISMS COLLECTED AT OFFSHORE STATIONS (30-FOOT DEPTH)  
BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY  
BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

CNIDARIA  
ACTINIARIA (SEA ANEMONES)  
UNIDENTIFIED SP.

PLATYHELMINTHES  
TURBELLARIA (FLATWORMS)  
UNIDENTIFIED SP.

NEMERTINEA (RIBBON WORMS)  
UNIDENTIFIED SP.

NEMATODA (ROUNDWORMS)  
UNIDENTIFIED SP.

PHORONIDA (PHORONIDS)  
PHORONIS ARCHITECTA

BRACHIOPODA (LAMP SHELLS)  
GLOTTIDIA PYRAMIDATA

MOLLUSCA (SHELLFISH)  
GASTROPODA (SNAILS)

ACTEOCINA CANALICULATA  
ACTECCINA CANDEI  
ACTEON PUNCTOSTRIATUS  
ANACHIS FLORICANA  
BULLA STRIATA  
CAECUM FLORIDANUM  
CAECUM IMBRICATUM  
CAECUM PULCHELLUM  
CYLICHNELLA BIDENTATA  
DIASIMA VARIUM  
MELANELLA JAMAICENSIS  
NASSARIUS ACUTUS  
NATICA PUSILLA  
OLIVA SAYANA  
OLIVELLA BULLULA  
OLIVELLA MINUTA  
OLIVELLA MUTICA  
OLIVELLA PUSILLA  
PHILINE SAGRA  
POLINICES DUPLICATUS  
TEREBRA CONCAVA  
TEREBRA DISLOCATA  
TURBNILLA CONRADI  
TURBNILLA ELEGANTULA  
TURBNILLA SP.

PELECYPODA (CLAMS)  
ANADARA FLORIDANA  
ANATINA ANATINA  
CARDIOMYA COSTELLATA  
CHIONE CANCELLATA  
CHIONE GRUS  
CUMINGIA TELLINOIDES  
CUMINGIA T. VANHYNINGI  
CUNA CALLI  
DIPLOCCNYA SEMIASPERA  
DIPLOCCNYA SP.  
ERVILIA CONCENTRICA  
LAEVICARDIUM LAEVIGATUM  
LAEVICARDIUM MORTONI  
LAEVICARDIUM PICTUM

LEPTON SP.  
LUCINA MULTILINEATA  
LUCINA RADIANI  
LYNSIA H. FLORICANA  
MACOMA CONSTRICTA  
MACRACALLISTA MACULATA  
MACRACALLISTA NIMBOSA  
MACRA SP.  
MUSCULUS LATERALIS  
NUCULANA ACUTA  
PANDORA TRILINEATA  
PARVIDEA SOLENIIFORMIS  
PARVILUCINA BLANDA  
PEPILOMA MARGARITACEUM  
PITAE SIMPSONI  
SEMLE PROFICUA  
SOLEMYA SP.  
SOLEMYA VELUM  
SOLEMYA VIRIDIS  
STRIGILLA MIRABILIS  
TELLIDORA CRISTATA  
TELLINA A. TAYLORIANA  
TELLINA AEGUISTRIATA  
TELLINA IRIS  
TELLINA TAMPAENSIS  
TELLINA TEXANA  
TELLINA VERSICOLOR  
TRACHYCARDIUM MURICATUM  
VARICORBULA OPERCULATA  
VENERIDAE UNIDENTIFIED SP.

ANNELIDA (SEGMENTED WORMS)

CLIGOCFAETA  
UNIDENTIFIED SP.

POLYCHAETA  
AGLAPHAMUS VERRILLI  
AMERICONUPHIS MAGNA  
AMPHARETE ACUTIFRONS  
ANATIDES ERYTHROPHYLLUS  
ANTINCE SP.  
ARONICES MAYAQUEZENSIS  
ARONICES PYGMAEA  
ARENICOLA CRISTATA  
ARICIDEA CERRUTI  
ARICIDEA FAUVELI  
ARICIDEA FRAGILIS  
ARICIDEA PHILIPINAE  
ARICIDEA SUECICA  
ARICIDEA TAYLORI  
ARICIDEA WASSI  
ARICIDEA SP.  
ARMANDIA AGILIS  
ARMANDIA MACULATA  
ASYCHIS CAROLINAE  
AXIOPELLA MUCOSA  
BRANCHIOASYCHIS AMERICANA  
BRANIA CLAVATA  
BRANIA WELFLEETENSIS  
CASIRA INCERTA  
CAPITELLA CAPITATA  
CAPITELLIDES JONESI  
CAPITELLIDAE UNIDENTIFIED SP.  
CARAZZIELLA SP.  
CAULLERIELLA SP.  
CERATONEREIS TRITABILIS  
CERATONEREIS MIRABILIS  
CHAETONE GAYHEADIA

CHAETOCZENE SETCSA  
 CHLOEIA VIRIDIS  
 CHONE SP.  
 CIRRHATULIDAE UNIDENTIFIED SP.  
 CIRRORPHORUS LYRIFORMIS  
 CISTERNICES GULOLI  
 CASTERANCHUS LUMBRICOIDES  
 CUPATRA CUPREA  
 CUSPID UNCINATA  
 CORYVILLA SOCIABILIS  
 COTESCHIA BELLUCIDA  
 CNOPLORANCHUS SANGUINEUS  
 CYTONE ALBA  
 CYTONE LACTEA  
 CYTONE SANGUINEA  
 CUNYCE ANTIENNATA  
 CURYTHOE COMPLANATA  
 CYGONE DISPAR  
 FLABELLIGERA SP.  
 GLYCERA AMERICANA  
 GLYCERA DIBRANCHIATA  
 GLYCERA OXYCEPHALA  
 GLYCERA SP.  
 GLYCINE SOLITARIA  
 GONIADA LITTOREA  
 GRUBELEPIS MEXICANA  
 GYPTIS BREVIPALPA  
 GYPTIS VITTATA  
 HAPLISCLOPLOS FOLIOSUS  
 HAPLISCLOPLOS FRAGILIS  
 HAPLISCLOPLOS ROBUSTUS  
 HARMOTHOE IMBRICATA  
 HARMOTHOE LUNULATA  
 HENYCDUS ROSEUS  
 HETEROMASTUS FILIFORMIS  
 ISOLDA PULCHELLA  
 LAEONEREIS CULVERI  
 LOIMIA MEDUSA  
 LOIMIA VIRIDIS  
 LUMBRINERIS ACUTUS  
 LUMBRINERIS CRUZENSIS  
 LUMBRINERIS ERECTA  
 LUMBRINERIS TENUIS  
 LUMBRINERIS TETRAURA  
 LYSIDICE NINETTA  
 LYSILLA ALBA  
 MACROCLYMENE ZONALIS  
 MAGELONA LONGICORNIS  
 MAGELONA PETTIBONEAE  
 MAGELONA RIOJAY  
 MAGELONA SP.  
 MALACCCERUS INDICUS  
 MEDIDMASTUS CALIFORNIENSIS  
 MEGALOMMA BIOCULATUM  
 MESOCIAETOPTERUS SAGITTARIUS  
 MICROPHTHALMUS ABERRANS  
 MICROPHTHALMUS SCZELKOWII  
 MICROPHTHALMUS SP.  
 MICROCSPID PIGMENTATA  
 MINUSPID CIRRIFERA  
 MYRICHELE SP.  
 NEANTHES ACUMINATA  
 NEANTHES SP.  
 NEANTHES SUCCINEA  
 NEPHYS BUCERA  
 NEPHYS PICTA  
 NEREIS LAMELLOSA  
 NEREIS PELAGICA  
 NEREIS SP.  
 NOTOMASTUS HENIPDOUS  
 NOTOMASTUS LATERICEUS  
 ONUPHIS EPEMITA OCULATA  
 ONUPHIS NEBULOSA  
 ONUPHIS PALLICA  
 OPHELIA SP.

ORHINIA RISERI  
 OWENIA FUSIFORMIS  
 PARANITES SPECIOSA  
 PARACNIDES LYRA  
 PARACNIDES SP.  
 PARACNIS FULGENS  
 PARACNIS SP.  
 PARAPRICNOSPID PINNATA  
 PARAPRICNOSPID LONGICARRATA  
 PHERUS EMERSI  
 PHYLLODICE ARENAE  
 PHYLLODICE SP.  
 PHYLLOCRINATUS  
 PISTA CRISTATA  
 PISTA PALMATA  
 PODARKE OBSCURA  
 POECILOCHASTUS JOHNSONI  
 POLYCIPRUS EXIMIUS  
 POLYOCRA SOCIALIS  
 POLYOCRA TETRABRANCHIA  
 POLYODONTES LUPINA  
 POLYODONTES UNIDENTIFIED SP.  
 PRIONOSPID CRISTATA  
 PRIONOSPID STEENSTRUPI  
 PSEUDEURYTHOE AMBIGUA  
 RULLIERINEREIS MEXICANA  
 SABELLA MICROPHTHALMA  
 SCOLELEPIS SQUAMATA  
 SCOLELEPIS TEXANA  
 SCOLOPLOS ARMIGER  
 SCOLICELUS RUBRA  
 SIGALION ARENICOLA  
 SIGAMBRA BASSI  
 SIGAMBRA TENTACULATA  
 SPHAEROSYLLIS SP.  
 SPID PETTIBONEAE  
 SPIDONTIDAE UNIDENTIFIED SP.  
 SPIOCHAETOPTERUS OCULATUS  
 SPIDENANES BOMBYX  
 STHEKELATIS BOA  
 STREETOSYLLIS ARENAE  
 THARYX ANNULOSUS  
 TRAVISIA HORSNAE  
 WEBSTERINEREIS TRIDENTATA

SIPUNCULICA (PEANUT WORMS)  
 ASPIDCSIPON SP.  
 GOLFINGIA TRICHOCEPHALA  
 SIPUNCULUS LONGIPAPILLOSUS  
 UNIDENTIFIED SP.

ECHIURIDA (ECHIURIDS)  
 UNIDENTIFIED SP.

ARTHROPODA (CRUSTACEANS)

AMPHIPCCA  
 ACANTHCHAUSTORIUS SP.  
 AMPELISCA ABDITA  
 AMPELISCA SP.  
 AMPELISCA VADORUM  
 AMPELISCA VERRILLI  
 ARGISSA SP.  
 CAPRELLIDAE UNIDENTIFIED SP.  
 CARINCTATEA SP.  
 COROPHIUM SP.  
 CYNADLSA SP.  
 ELASMCEPUS SP.  
 ERICHTHONYUS SP.  
 GAMMAROBSIS SP.  
 GITANOPSIS SP.  
 HIPPOMEDON SP.  
 HYPERIA SP.



LEMBOS SP.  
LEPIDACTYLUS SP.  
LISTERELLA SP.  
LYSIANOPSIS SP.  
MELITA APPENDICULATA  
MICRODEUTOPUS SP.  
MICROPROTOPUS SP.  
MONOCULODES SP.  
PARAPHOXUS SP.  
PHOTIS SP.  
PROTOMASTORIUS SP.  
PSUDOMASTORIUS SP.  
PSUDOPLATYSCNOPUS SP.  
SYNCELIUM SP.  
TIRCA BIOSCELLATUS  
TIRON SP.  
 UNIDENTIFIED SP.  
 ANOMURA  
ALBONEA PARETII  
EUCERAMUS PRAELONGUS  
LEPIDOPA WEBSTERI  
PAGURUS LONGICARPUS  
PAGURUS SP.  
PETRECHIRUS DIOGENES  
PETRELISTHES GALATHINUS  
 BRACHYURA  
CALLINECTES SAPIDUS  
CALLINECTES SP.  
DISSODACTYLUS MELLITAE  
HEPATUS EPHELITICUS  
LIGINIA DUBIA  
METOPORHAPIS CALCARATA  
OSACHILA TUBEROSA  
OVALIPES OCELLATUS  
PANORPEUS HERBSTII  
PERSEPHONA P. AQUILONARIS  
PINNIXIA CHAETOPTERANA  
PINNIXIA CYLINDRICA  
PINNIXIA CRISTATA  
PINNIXIA LEPTOSYNAPTAE  
PINNIXIA LUNZI  
PINNIXIA PEARSEI  
PINNIXIA RETINENS  
PINNIXIA SAYANA  
PINNIXIA SP.  
PINNOHERES MACULATUS  
PINNOHERES OSTREUM  
PINNOHERES SP.  
PORTUNUS GIBBESII  
PORTUNUS SAYI  
PORTUNUS SP.  
PORTUNUS SPINIMANUS  
 PORTUNIDAE UNIDENTIFIED SP.  
RANILIA MURICATA  
 CALLINANASSIDAE  
CALLINANASSA JAMAICENSE  
 CARIDEA  
ALPHEUS HETEROCHAELIS  
AMBICEPTER SYMMETRICUS  
HIPPOLYTE PLEURACANTHA  
LATREUTES PARVULUS  
LEPTOCHELA SERRATORBITA  
OGYRIDES ALPHAEROSTRIS  
OGYRIDES LIMICOLA  
BERGIMENES LONGICAUDATUS  
PROCESSA HEMPHILLI  
PROCESSA VICINA  
SYNALPHEUS SP.  
 UNIDENTIFIED SP.  
 CUMACEA  
CYCLAPSIS SP.  
CYCLAPSIS VARIANS  
OXYUROSSTYLIS SMITHI

SPILOCUMA SALOMANI  
 UNIDENTIFIED SP.  
 ISOPODA  
ANCINA DEPRESSUS  
APANTHURA MAGNIFICA  
CHIROCTEA EXCAVATA  
EDOTEA MONTOSA  
 LEPTOSTRACA  
NEBALIA SP.  
 MYSIDACEA  
BOWMANIELLA SP.  
MYSTICOPSIS BIGELOWI  
PRAUNUS FLEXUOSUS  
 UNIDENTIFIED SP.  
 OSTRACODA  
HAPLOCYTHERIDEA SEPTIPUNCTATA  
SARIELLA CHILDI  
 UNIDENTIFIED SP.  
 PENAEIDEA  
ACETES AMERICANUS  
LUCIFER FAXONI  
PENAEUS DUORARUM  
SICYCNIA BREVIROSTRIS  
SICYCNIA SP.  
SICYCNIA TYPICA  
TRACHYPENAEUS CONSTRICTUS  
 STOMATOPODA  
ACANTHOSQUILLA BIMINIENSIS  
CORONIS EXCAVATRIX  
 TANAIIDACEA  
 UNIDENTIFIED SP.

ECHINODERMATA  
 ASTEROIDEA (STARFISHES)  
ASTROPECTEN ARTICULATUS  
LUZIA ALTERNATA  
 ECHINOIDEA (SAND DOLLARS; URCHINS)  
LYTECHINUS VARIEGATUS  
MOIRA ATROPS  
MELLITA QUINQUESPERFORATA  
 UNIDENTIFIED SP.  
 HOLOTHURIDEA (SEA CUCUMBERS)  
LEPTOSYNAPTA SP.  
 UNIDENTIFIED SP.  
 OPHIUROIDEA (BRITTLE STARS)  
HEMIPHOLIS ELONGATA  
MICROPHOLIS GRACILLIMA  
OPHIOPHRAGMUS FIDIGRANEUS  
OPHIOPHRAGMUS MOOREI  
OPHIOPHRAGMUS WOODMANI  
 UNIDENTIFIED SP.

HEMICHORDATA  
 ENTEROPNEUSTA (ACORN WORMS)  
 UNIDENTIFIED SP.

CEPHALOCHORDATA (LANCELETS)  
BRANCHIOSTOMA FLORIDAE

VERTEBRATA  
 PISCES (FISHES)  
 GOBIIDAE, UNIDENTIFIED SP.  
 HEMIPTERONCTUS NOVACULA  
LEBOPHIDIUM GRAELLSI  
MICROGONIUS CARRI  
 OPHIDIIDAE, UNIDENTIFIED SP.  
SYMPHURUS SP.

## APPENDIX C

### BIOLOGICAL AND BIOSTATISTICAL DATA BY STATION

Biological and biostatistical data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

BIOLOGICAL AND BIOSTATISTICAL DATA, BY STATION AND DATE, FOR OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

STATION A - CONTROL

SPECIES	NO. OF INDIVIDUALS				TOTAL	PCT.
	11/74	2/75	5/75	8/75		
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	0	4	1	5	0.58
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	1	4	7	8	20	2.33
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	0	19	7	18	44	5.12
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTECCINA CANDEI	0	0	0	1	1	0.12
ACTECCIN PUNCTOSTRIATUS	0	0	0	1	1	0.12
NATICA PLISILLA	0	0	0	2	2	0.23
OLIVELLA MLYICA	0	0	0	2	2	0.23
POLINICES DUPLICATUS	0	0	2	0	2	0.23
TEREBRA DISLOCATA	0	0	1	0	1	0.12
PELECYPODA (CLAMS)						
ERVILIA CONCENTRICA	0	0	1	1	2	0.23
LUCINA MULTILINEATA	0	2	2	4	8	0.93
PERIPICHA MARGARITACEUM	0	1	0	0	1	0.12
STRIGILLA MIRABILIS	0	0	2	10	12	1.40
TELLINA VERSICOLOR	0	0	1	19	20	2.33
ANNELIDA (SEGMENTED WORMS)						
OLIGOCHAETA						
UNIDENTIFIED SP.	22	35	5	0	62	7.22
POLYCHAETA						
APCCEICNO SPIO PYGMAEA	0	1	1	3	5	0.58
ARICILEA SP.	2	2	0	0	4	0.47
ARMANCA MACULATA	5	2	18	4	29	3.38
ERANIA CLAVATA	0	0	0	1	1	0.12
ERANIA VELLFLEETENSIS	0	0	2	4	6	0.70
CAPITELLIDAE UNIDENTIFIED SP.	0	2	0	0	2	0.23
DIOPATRA CUPREA	0	1	0	0	1	0.12
DISPIO UNCINATA	0	0	0	1	1	0.12
ETEDNE LACTEA	0	0	1	7	8	0.93
GLYCERA AMERICANA	0	0	1	4	5	0.58
HAPLOSCOLOPLOS FOLIOLUS	0	0	0	1	1	0.12
HAPLOSCOLOPLOS ROBUSTUS	0	1	0	0	1	0.12
LUMBRINERIS CRUZENSIS	0	0	0	11	11	1.28
MAGELCNA RIOJAI	0	0	1	0	1	0.12
MAGELCNA SP.	0	0	1	0	1	0.12
MESOCIAETOPTERUS SAGITTARILIS	0	0	1	0	1	0.12
MINUSPIO CYRRIFERA	0	1	1	0	2	0.23
NEPHYS BUCERA	0	0	0	2	2	0.23
NEPHYS PICTA	0	2	7	6	15	1.75
ONUPHIS ERENITA OCULATA	1	0	0	0	1	0.12
PARANATIES SPECIOSA	0	0	0	1	1	0.12
PARACNIDES LYRA	19	5	0	1	25	2.91
PARACNIDES SP.	2	0	0	0	2	0.23
PARAPRIONOSPIO PINNATA	17	1	3	0	21	2.44
PHYLLCDOCE ARENAE	0	0	4	0	4	0.47
PHYLLCDOCE SP.	0	0	5	0	5	0.58
POECILOCHAETUS JOHNSONI	0	0	1	0	1	0.12
PRIONOSPIO CRISTATA	47	76	4	5	132	15.37
SCOLELEPIS SOVAMATA	2	0	0	0	2	0.23
SCOLELEPIS TEXANA	0	4	5	0	9	1.05
SCOLOPLOS RUBRA	0	1	0	0	1	0.12

STATION A - CONTROL  
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				TOTAL	PCT.
	11/74	2/75	5/75	8/75		
<u>SIGAMBRA BASSI</u>	0	1	1	2	4	0.47
<u>SPID. PETTIBONEAE</u>	7	5	9	1	22	2.56
<u>SPIDOCFAEIOPTERUS OCULATUS</u>	1	0	0	0	1	0.12
<u>SPIDOPHANE BOMBYX</u>	0	1	42	2	45	5.24
ARTHROPODA (CRUSTACEANS)						
AMPHIPODA						
<u>ACANTHOMAUSTORIUS SP.</u>	0	0	8	2	10	1.16
<u>LYSIANOPSIS SP.</u>	0	0	1	0	1	0.12
<u>PROTOFAUSTORIUS SP.</u>	0	12	58	15	85	9.90
<u>PSEUDOPHAUSTORIUS SP.</u>	0	3	4	3	10	1.16
<u>PSEUDOPHYTISCHNOPUS SP.</u>	1	2	2	16	21	2.44
<u>SYNCHELYDIUM SP.</u>	0	2	3	0	5	0.58
ANOMURA						
<u>ALBUEA PARETII</u>	1	0	0	0	1	0.12
BRACHYURA						
<u>PINNIZIA CRISTATA</u>	0	0	0	1	1	0.12
<u>PINNATHERES MACULATUS</u>	0	0	2	0	2	0.23
<u>PORTUNUS GIBBESII</u>	0	0	0	1	1	0.12
<u>PORTUNUS SPINIFRONS</u>	1	0	0	0	1	0.12
<u>RANILIA RUBICATA</u>	0	0	0	2	2	0.23
CARIDEA						
<u>PROCESSA MEMPHILLI</u>	0	0	7	0	7	0.81
<u>PROCESSA VICINA</u>	0	0	0	1	1	0.12
CLNACEA						
<u>CYCLAPSIS VARIANS</u>	0	0	0	1	1	0.12
<u>ORYZODONTIS SMITHI</u>	0	0	3	0	3	0.35
<u>UNIDENTIFIED SP.</u>	0	0	0	2	2	0.23
OSTRACCA						
<u>UNIDENTIFIED SP.</u>	0	0	0	8	8	0.93
PENAIDEA						
<u>SICYCNIA BREVIROSTRIS</u>	0	1	0	0	1	0.12
ECHINODERMATA						
ECHINOIDEA (SAND DOLLARS; URCHINS)						
<u>HELLITA QUINQUESPERFORATA</u>	0	0	0	45	45	5.24
HOLOTHURIDEA (SEA CUCUMBERS)						
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.35
OPHIURIDEA (BRITTLE STARS)						
<u>UNIDENTIFIED SP.</u>	0	0	11	0	11	1.28
CEPHALOCHORDATA (LANCELETS)						
<u>BRANCHIOSTOMA FLORIDAE</u>	0	1	59	19	79	9.20
VERTEBRATA						
PISCES (FISHES)						
<u>HEMITELEOSTEUS NOVACULA</u>	0	0	0	1	1	0.12
<u>OPHIOTIDAE, UNIDENTIFIED SP.</u>	0	0	1	0	1	0.12
TOTALS						
NC. SPECIES	125	188	299	243	855	
NC. IND. PER M2	15	27	41	43	75	
S-W INDEX - H'(LN)	2064	3008	4784	3888		
EVENNESS - J	1.923	2.154	2.801	3.113		
	0.710	0.654	0.754	0.828		
AV. NO. SPECIES	31.5	AV. S-W INDEX	2.498			
AV. NC. IND. PER M2	34.36.0	AV. EVENNESS	0.736			

## STATION B - CONTROL

SPECIES	NO. OF INDIVIDUALS					PCT.
	11/74	2/75	5/75	8/75	TOTAL	
CNIDARIA						
ACTINIARIA (SEA ANEMONES)						
UNIDENTIFIED SP.	0	0	0	2	2	0.17
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	0	2	1	3	0.26
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	0	3	6	7	16	1.39
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	0	18	2	11	31	2.70
MOLLUSCA (SHELLFISH)						
GASTROSCA (SNAILS)						
ACTECCIA CANDEI	0	0	0	6	6	0.52
PELECYFIDA (CLAMS)						
CHIONE CANCELLATA	0	1	0	0	1	0.09
ERVILIA CONCENTRICA	0	0	2	1	3	0.26
STRIGILLA MIRABILIS	0	1	7	74	82	7.14
TELLINA VERSICOLOR	0	0	0	28	28	2.44
ANNELIDA (SEGMENTED WORMS)						
CLIGGCHAETA						
UNIDENTIFIED SP.	18	26	1	10	55	4.79
POLYCHAETA						
AGLACPHAMUS VERRILLI	1	0	0	0	1	0.09
AMPHARETE ACUTIFRONS	1	0	0	0	1	0.09
ANATIDES ERYTHROPHYLLUS	0	0	1	0	1	0.09
APORRIONOSPION PYGMAEA	0	0	2	0	2	0.17
ARICICEA FRAGILIS	1	0	0	1	2	0.17
ARMANCIA MACULATA	11	13	24	1	49	4.26
BRANCIA WELFLEETENSIS	4	1	1	3	9	0.78
CAPITELLIDAE UNIDENTIFIED SP.	1	0	0	0	1	0.09
CAULLERIELLA SP.	0	0	0	2	2	0.17
CERATONEREIS IRRITABILIS	0	0	0	2	2	0.17
CIRRATULIDAE UNIDENTIFIED SP.	0	1	0	0	1	0.09
DISPID UACINATA	0	0	0	1	1	0.09
EIECNE LACTEA	0	0	1	4	5	0.44
GLYCERA AMERICANA	0	0	0	3	3	0.26
GYPTIS VITTATA	4	1	0	0	5	0.44
HAPLOSCLIOPLIS FRAGILIS	0	1	0	0	1	0.09
HETERONASTIUS FILIPICRMIS	3	0	0	0	3	0.26
LUMBINERIS CROZENSIS	0	0	0	2	2	0.17
LAGELINA SP.	1	0	0	0	1	0.09
MEDICASTIUS CALIFCENIENSIS	0	0	0	1	1	0.09
MESOCAPTEPTERUS SAGITTARIUS	0	0	0	3	3	0.26
MINUSPIC CIRRIFERA	0	1	0	0	1	0.09
NEPHIYS BUCERA	0	0	1	0	1	0.09
NEPHIYS PICTA	0	0	6	4	10	0.87
NOTICASTIUS HEMIPEDUS	0	0	0	2	2	0.17
OPHELIA SP.	9	3	0	5	17	1.48
OWENIA FUSIFORMIS	1	0	0	0	1	0.09
PARACNIDES LYRA	3	3	0	1	7	0.61
PARACNIDES FULGENS	0	3	0	0	3	0.26
PARAPOLYDORUS PINNATA	10	1	0	0	11	0.96
PHYLLIDICE ARENAE	0	0	2	0	2	0.17
PHYLLIDICE SP.	0	0	2	0	2	0.17
PTECILICHAETUS JOHNSONI	0	1	0	0	1	0.09

STATION B - CONTROL  
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				TOTAL	PCT.
	11/74	2/75	5/75	8/75		
<u>FRICNCSPID CRISTATA</u>	134	55	3	18	210	18.28
<u>SCOLELEPIS SQUAMATA</u>	1	1	0	0	2	0.17
<u>SCOLELEPIS TEXANA</u>	0	3	11	0	14	1.22
<u>SCOLEPLOS RUBRA</u>	0	2	0	0	2	0.17
<u>SPID PETTIBONEAE</u>	9	1	22	5	37	3.22
<u>SPIONIDAE UNIDENTIFIED SP.</u>	2	0	0	0	2	0.17
<u>SPIOPHANES BCMBYX</u>	0	0	29	7	36	3.13
<u>TRAVISIA HOBSCNAE</u>	0	0	0	3	3	0.26
 <u>SIPUNCULICA (PEANUT WORMS)</u>						
<u>SIPUNCULLS LONGIPAPILLCSUS</u>	0	1	0	1	2	0.17
 <u>ARTHROPODA (CRUSTACEANS)</u>						
<u>AMPHIFODA</u>						
<u>ACANTHOHAUSTORIUS SP.</u>	0	6	16	7	29	2.52
<u>AMPELISCA SP.</u>	1	0	0	1	2	0.17
<u>LISTRIELLA SP.</u>	0	0	0	3	3	0.26
<u>MONOCULODES SP.</u>	0	0	0	1	1	0.09
<u>PROTOMALSTORIUS SP.</u>	0	29	100	8	137	11.92
<u>PSEUDOMALSTORIUS SP.</u>	0	0	1	1	2	0.17
<u>PSEUDOPLATYISCHNOPUS SP.</u>	1	4	3	11	19	1.65
<u>SYNCHELIDIUM SP.</u>	3	0	6	1	10	0.87
<u>BRACHYURA</u>						
<u>PINNIXIA CRISTATA</u>	0	0	1	0	1	0.09
<u>PINNIXIA SAYANA</u>	0	0	0	6	6	0.52
<u>RANILIA MURICATA</u>	0	0	0	2	2	0.17
<u>CARIDEA</u>						
<u>PROCESSA TEMPHILLI</u>	1	0	1	11	13	1.13
<u>PROCESSA VICINA</u>	0	0	0	1	1	0.09
<u>CUMACEA</u>						
<u>CYCLAPSID VARIANS</u>	0	0	0	2	2	0.17
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
<u>GSTRACCA</u>						
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
<u>PENAEIDAE</u>						
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0	0	0	1	0.09
 <u>ECHINODERMATA</u>						
<u>ECHINOCIDEA (SAND DOLLARS; URCHINS)</u>						
<u>MELLITA QUINQUE SPERFORATA</u>	5	0	0	6	11	0.96
<u>UNIDENTIFIED SP.</u>	0	0	7	0	7	0.61
<u>HOLOTHUROIDEA (SEA CUCUMBERS)</u>						
<u>LEPTOSYNAPTA SP.</u>	0	0	0	1	1	0.09
<u>OPHIUROIDEA (BRITTLE STARS)</u>						
<u>OPHIOURUS FILIGRANEUS</u>	1	0	0	0	1	0.09
 <u>CEPHALOCORDATA (LANCELETS)</u>						
<u>BRANCHIOSTOMA FLORIDAE</u>	10	69	74	51	204	17.75
 <u>VERTEBRATA</u>						
<u>PISCES (FISHES)</u>						
<u>MICROGASTER CARRI</u>	1	0	0	0	1	0.09
 <u>TOTALS</u>						
NC. SPECIES	238	249	334	328	1149	
NO. IND. PER M2	27	26	28	47	75	
S-W INDEX - F'(LN)	3808	3984	5344	5248		
EVENNESS - J	1.898	2.247	2.320	3.000		
	0.576	0.690	0.696	0.779		
AV. NC. SPECIES	32.0					
AV. NC. IND. PER M2	4596.0					
AV. S-W INDEX		2.366				
AV. EVENNESS		0.685				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

SPECIES	NO. OF INDIVIDUALS			TOTAL	PCT.
	4/76	6/76	7/76		
CNIDARIA					
ACTINIARIA (SEA ANEMONES)					
UNIDENTIFIED SP.	0	1	2	3	0.06
PLATYHELMINTHES					
TURBELLARIA (FLATWORMS)					
UNIDENTIFIED SP.	0	3	0	3	0.06
NEMERTINEA (RIBBON WORMS)					
UNIDENTIFIED SP.	25	37	62	124	2.34
NEMATODA (ROUNDWORMS)					
UNIDENTIFIED SP.	25	48	133	206	3.89
PHORONIDA (PHORONIDS)					
PHORONIS ARCHITECTA	2	2	1	5	0.09
MOLLUSCA (SHELLFISH)					
GASTROPODA (SNAILS)					
ACTECCINA CANALICULATA	1		0	2	0.04
ACTECCINA CANDEI	0	18	24	42	0.79
CAECUM FLORIDANUM	0	9	20	29	0.55
CAECUM IMBRICATUM	0	0	1	1	0.02
CYLICINELLA BICENTATA	0	3	11	14	0.26
DIASITOMA VARIUM	0	0	5	5	0.09
NATICA PUSILLA	0	0	16	16	0.30
OLIVELLA BULLULA	0	0	11	11	0.21
OLIVELLA MUTICA	1	0	2	3	0.06
OLIVELLA PUSILLA	0	3	0	3	0.06
TURBONILLA CONRADI	0	0	10	10	0.19
TURBONILLA ELEGANTULA	0	0	5	5	0.09
TURBONILLA SP.	0	0	1	1	0.02
PELECYPODA (CLAMS)					
ANADARA FLORIDANA	0	3	22	25	0.47
CHIONE GRUS	0	1	0	1	0.02
CUMINGIA T. VANHYNINGI	0	0	1	1	0.02
DIPLODOCTA SP.	0	0	2	2	0.04
ERVILLA CONCENTRICA	1	15	223	239	4.52
LEPTA SP.	3	0	10	13	0.25
LUCINA MULTILINEATA	6	35	30	71	1.34
LUCINA FADIANUS	1	0	0	1	0.02
LYONSIA H. FLORIDANA	0	2	4	6	0.11
MACRICALLISTA NIMBOSA	0	0	1	1	0.02
MACTEA SP.	0	0	1	1	0.02
PAPYRIDEA SOLENIIFORMIS	1	0	0	1	0.02
PARVILUCINA BLANCA	1	0	0	1	0.02
PERILICHA MARGARITACEUM	1	1	0	2	0.04
PITAE SIMPSONI	1	4	5	10	0.19
SEPIE PECTICUA	0	0	6	6	0.11
STRIGILLA MIRABILIS	1	1	22	24	0.45
TELLINA TEXANA	0	7	90	97	1.83
TELLINA VERSICOLOR	13	43	555	611	11.54
VENETIDAE UNIDENTIFIED SP.	0	9	3	12	0.23
ANNELIDA (SEGMENTED WORMS)					
CLIOCHÆTA					
UNIDENTIFIED SP.	46	20	31	97	1.83
POLYCHÆTA					
AMPHARETE ACUTIFRONS	5	0	0	5	0.09
APCERINUS PYGMAEA	2	5	6	13	0.25

TREASURE ISLAND MOTEL (STATION 1) - CONTROL  
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS			TOTAL	PCT.
	4/76	6/76	7/76		
ARMANCIA AGILIS	0	1	6	7	0.13
ARMANCIA MACULATA	11	7	29	47	0.89
ERANCIASUCHIS AMERICANA	1	0	0	1	0.02
ERANIA CLAVATA	0	0	1	1	0.02
ERANIA WELFLEETENSIS	1	3	10	14	0.26
CAPITELLA CAPITATA	0	0	1	1	0.02
CAULLERIELLA SP.	0	0	1	1	0.02
CERATONEREIS MIRABILIS	0	0	3	3	0.06
CHONE SP.	0	1	9	10	0.19
DIOPATRA CUPREA	0	0	2	2	0.04
CISPIC UNCINATA	3	1	0	4	0.08
ENOPLOERANCHUS SANGUINEUS	0	0	1	1	0.02
ETECNE LACTEA	2	5	7	14	0.26
EULALIA SANGUINEA	0	0	1	1	0.02
EXOECNE CISPAR	0	0	1	1	0.02
GLYCERA AMERICANA	1	33	25	59	1.11
GLYCERA DIERANCHIATA	0	0	2	2	0.04
GLYCERA OXYCEPHALA	8	0	0	8	0.15
GLYCERA SP.	0	0	2	2	0.04
GONIATA LITTOREA	0	24	17	41	0.77
GRUEFULEPIS MEXICANA	0	1	0	1	0.02
GYPTIS VITTATA	0	0	1	1	0.02
HAPLOCYCLOPLOS FOLIOSUS	2	4	8	14	0.26
PARMOTICE LUNULATA	0	1	0	1	0.02
ISOLTA PULCHELLA	1	0	0	1	0.02
LUMBERINERIS CRUZENSIS	2	146	940	1088	20.56
LUMBERINERIS TETRAURA	0	5	0	5	0.09
LYSILLA ALBA	1	0	0	1	0.02
MAGELCNA RIOJAI	1	0	0	1	0.02
MAGELCNA SP.	0	1	6	7	0.13
MEDICMASTUS CALIFORNIENSIS	0	2	0	2	0.04
MESOCYCTOPTERUS SAGITTARIUS	0	0	35	35	0.66
MYRICICELE SP.	1	0	0	1	0.02
NEANTHES ACUMINATA	1	0	0	1	0.02
NEANTHES SUCCINEA	0	0	1	1	0.02
NEPHIYS BUCERA	2	2	11	15	0.28
NEPHIYS PICTA	48	37	56	141	2.66
NEREIS PELAGICA	1	0	6	7	0.13
NOTOMASTUS HEMIPODUS	0	2	2	4	0.08
NOTOMASTUS LATERICELUS	0	3	0	3	0.06
ONUPHIS EREMITA OCULATA	3	17	32	52	0.98
ONUPHIS NEBULOSA	2	1	0	3	0.06
OWENIA FUSIFORMIS	7	10	8	25	0.47
PARANATHES SPECIOSA	0	2	0	2	0.04
PARACNIDES LYRA	3	6	3	12	0.23
PARACNIS FULGENS	4	4	10	18	0.34
PARAPRIONOSPIO PINNATA	16	0	1	17	0.32
PHYLLODOCE ARENAE	5	3	24	32	0.60
PISTA CRISTATA	1	0	0	1	0.02
PISTA PALMATA	0	0	1	1	0.02
POECILOCHAETUS JOHNSONI	1	0	0	1	0.02
POLYDORA TETRABRANCHIA	0	4	0	4	0.08
PRIONOSPIO CRISTATA	16	105	205	326	6.16
PRIONOSPIO STEENSTRUPI	0	0	11	11	0.21
PSEUDOCURYTHOE AMBIGUA	1	0	0	1	0.02
RULLIERINEREIS MEXICANA	0	2	6	8	0.15
SABELLA MICROPHYLMA	0	0	1	1	0.02
SCOLELEPIS SOVAMATA	0	1	1	2	0.04
SCOLELEPIS TEXANA	4	2	3	9	0.17
SCOLICLOS ARMIGER	0	1	17	18	0.34
SYLICHN ARENICOLA	0	1	0	1	0.02



TREASURE ISLAND HOTEL (STATION 1) - CONTROL  
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS			TOTAL	PCT.
	4/76	6/76	7/76		
<u>SIGAMBRA BASSI</u>	1	1	5	7	0.13
<u>SPIC. PETTIBONEAE</u>	12	1	15	28	0.53
<u>SPIC. CAETICTERUS OCULATUS</u>	4	0	2	6	0.11
<u>SPIC. HANES BCMBYX</u>	336	40	21	397	7.50
<u>SITHELAIS BCA</u>	1	0	1	2	0.04
 <u>SIPUNCULICA (PEANUT WORMS)</u>					
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0	1	2	0.04
 <u>ARTHOPODA (CRUSTACEANS)</u>					
<u>AMPHIPODA</u>					
<u>ACANTHCHAUSTICEIUS SP.</u>	1	0	7	8	0.15
<u>AMPELISCA ABDITA</u>	0	1	0	1	0.02
<u>AMPELISCA VERNILLI</u>	2	7	89	98	1.85
<u>ARGYSSA SP.</u>	0	1	5	6	0.11
<u>COROPHIUM SP.</u>	0	0	1	1	0.02
<u>CYMAULSA SP.</u>	1	0	0	1	0.02
<u>ERICTHONIUS SP.</u>	0	0	1	1	0.02
<u>HYPERIA SP.</u>	0	0	1	1	0.02
<u>LEPTACTYLUS SP.</u>	0	1	0	1	0.02
<u>LISTERIELLA SP.</u>	0	1	6	7	0.13
<u>LYSIANOPSIS SP.</u>	0	1	0	1	0.02
<u>MICROPCTOPUS SP.</u>	0	3	0	3	0.06
<u>MONOCULODES SP.</u>	1	1	25	27	0.51
<u>PARAPLOXUS SP.</u>	0	1	1	2	0.04
<u>PROTIS SP.</u>	0	1	0	1	0.02
<u>PROTIFAUSTORIUS SP.</u>	2	0	27	29	0.55
<u>PSEUDOMALSTORIUS SP.</u>	1	1	7	9	0.17
<u>PSEUDOPLATYISCHNOPUS SP.</u>	56	19	209	284	5.37
<u>SYNCHELIDIUM SP.</u>	19	17	58	94	1.78
<u>TIRON BISCOCELLATUS</u>	0	0	2	2	0.04
<u>TIRON SP.</u>	1	0	0	1	0.02
<u>ANOMURA</u>					
<u>ALBUNEA PARETII</u>	0	1	0	1	0.02
<u>LEPIDODA WEBSTERI</u>	0	0	3	3	0.06
<u>PAGURUS LONGICARPUS</u>	0	0	8	8	0.15
<u>BRACHYURA</u>					
<u>CALLINECTES SP.</u>	0	0	5	5	0.09
<u>HEPATUS EPHELIICUS</u>	0	0	3	3	0.06
<u>LIBinia CUBIA</u>	0	0	1	1	0.02
<u>OVALIPES OCELLATUS</u>	0	0	1	1	0.02
<u>PERSPECTNA P. AQUILONARIS</u>	0	0	1	1	0.02
<u>PINNIXIA CRISTATA</u>	6	0	0	6	0.11
<u>PINNIXIA RETINENS</u>	0	3	8	11	0.21
<u>PINNIXIA SAYANA</u>	0	2	4	6	0.11
<u>CALLINASSIDAE</u>					
<u>CALLINASSA JAMAICENSE</u>	0	0	1	1	0.02
<u>CARIDEA</u>					
<u>ALPHEUS FETEROCHAEILIS</u>	0	1	0	1	0.02
<u>AMBICEPTER SYMMETRICUS</u>	0	1	0	1	0.02
<u>HIPPOLYTE PLEURACANTHA</u>	0	0	1	1	0.02
<u>LATHEUTES PARVULUS</u>	0	0	3	3	0.06
<u>PROCESSA TEMPHILLI</u>	0	3	3	6	0.11
<u>PROCESSA VICINA</u>	0	1	0	1	0.02
<u>CUMACEA</u>					
<u>CYCLIPSIS SP.</u>	0	1	6	7	0.13
<u>CYCLIPSIS VARIANS</u>	14	20	26	60	1.13
<u>OXYUROSTYLIS SMITHI</u>	4	11	13	28	0.53
<u>ISOPODA</u>					
<u>EGGTEA MCNIQUA</u>	0	1	4	5	0.09
<u>LEFTICSTRACA</u>					

TREASURE ISLAND HOTEL (STATION 1) - CONTROL  
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS			TOTAL	PCT.
	4/76	6/76	7/76		
<u>NEEALIA SP.</u>	0	0	6	6	0.11
<u>MYSTICACIA</u>					
<u>PRALLIS FLEXUCSUS</u>	0	1	0	1	0.02
<u>UNIDENTIFIED SP.</u>	3	1	2	6	0.11
<u>GSTRACCIA</u>					
<u>HAPLOCYTHERIDEA SEPTIFUNCTATA</u>	0	29	0	29	0.55
<u>UNIDENTIFIED SP.</u>	0	0	17	17	0.32
<u>PENAICEA</u>					
<u>SICYPTIA TYPICA</u>	0	1	0	1	0.02
<u>SICMATICCOA</u>					
<u>ACANTHOSQUILLA BMINIENSIS</u>	0	1	3	4	0.08
<u>ECHINODERMATA</u>					
<u>ASTEROCIDEA (STARFISHES)</u>					
<u>ASTROPECIEN ARTICULAILS</u>	0	0	1	1	0.02
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>					
<u>MELLITA QUINQUEPERFORATA</u>	1	50	123	174	3.29
<u>HOLOTHURACIDEA (SEA CUCUMBERS)</u>					
<u>UNIDENTIFIED SP.</u>	0	1	0	1	0.02
<u>OPHIURIDEA (BRITTLE STARS)</u>					
<u>OPHICHRAGMUS BURDEMANI</u>	0	1	1	2	0.04
<u>UNIDENTIFIED SP.</u>	0	8	14	22	0.42
<u>PENICHOCEATA</u>					
<u>ENTERCECELSTA (ACORN WORMS)</u>					
<u>UNIDENTIFIED SP.</u>	0	3	0	3	0.06
<u>CEPHALOCYCREATA (LANCELETS)</u>					
<u>BRANCHIOSICMA FLORICAE</u>	0	4	23	27	0.51
<u>VERTEBRATA</u>					
<u>PISCES (FISHES)</u>					
<u>HEMIPYERONOTUS NOVACULA</u>	0	0	1	1	0.02
<b>TOTALS</b>	<b>753</b>	<b>951</b>	<b>3589</b>	<b>5293</b>	
NO. SPECIES	67	94	120	166	
NO. IND. PER M2	1566	1902	7178		
S-W INDEX - H' (LN)	2.516	3.482	3.084		
EVENNESS - J	0.598	0.766	0.644		
AV. NO. SPECIES	93.7	AV. S-W INDEX	3.027		
AV. NO. IND. PER M2	3528.7	AV. EVENNESS	0.670		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/10/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>CNICARIA</b>				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	4	0.287	0	0.0
<b>PLATYHELMINTHES</b>				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.072	0	0.0
<b>NEMERTINEA (RIBBON WORMS)</b>				
UNIDENTIFIED SP.	23	1.650	1	1.235
<b>NEMATODA (ROUNDWORMS)</b>				
UNIDENTIFIED SP.	33	2.367	2	2.469
<b>MOLLUSCA (SHELLFISH)</b>				
GASTROPODA (SNAILS)				
CAECID FLORIDANUM	2	0.143	1	1.235
CYLICHELLA BIDENTATA	1	0.072	0	0.0
NASSARIUS ACUTUS	1	0.072	0	0.0
NATICA PUSILLA	2	0.143	0	0.0
OLIVELLA PULLULA	3	0.215	0	0.0
TEREBA DISLOCATA	2	0.143	0	0.0
TURBELLULA CONRADI	2	0.143	0	0.0
PELECYPODA (CLAMS)				
CUMINGIA TELLINOIDES	3	0.215	0	0.0
ERVILLIA CONCENTRICA	38	2.726	0	0.0
LEPTIS SP.	7	0.502	0	0.0
LUCINA MULTILINEATA	8	0.574	0	0.0
STRIGILLA MIRABILIS	13	0.933	0	0.0
TELLINA TAMPAENSIS	1	0.072	0	0.0
TELLINA TEXANA	93	6.671	0	0.0
TELLINA VERSICOLOR	123	8.824	12	14.815
<b>ANNELIDA (SEGMENTED WORMS)</b>				
CLIGOCFAETA				
UNIDENTIFIED SP.	7	0.502	0	0.0
POLYCHAETA				
AMPHARETE ACUTIFRONS	1	0.072	0	0.0
ARMANDIA MACULATA	1	0.072	0	0.0
AXIOHELLA MUCOSA	1	0.072	0	0.0
BRANIA BELLEFLEETENSIS	14	1.004	1	1.235
CAULIERIELLA SP.	1	0.072	1	1.235
CHONE SP.	1	0.072	0	0.0
ETECKE LACTEA	4	0.287	1	1.235
GLYCERA AMERICANA	6	0.430	1	1.235
GLYCERA SP.	2	0.143	0	0.0
GONIAIA LITTOREA	0	0.0	1	1.235
GYPHIS VITTATA	0	0.0	1	1.235
HAPLOSCELLOPLIS FOLIOSUS	2	0.143	0	0.0
PARALICHOE LUNULATA	1	0.072	0	0.0
LOIMIA MUCOSA	1	0.072	0	0.0
LUMEFINERIS CRUZENSIS	669	47.991	38	46.914
MAGELCNA SP.	1	0.072	0	0.0
MESOCALOPTERUS SAGITTARIUS	2	0.143	0	0.0
NEANIPES ACUMINATA	2	0.143	0	0.0
NEPHYS BUCERA	1	0.072	0	0.0
NEPHYS PICTA	5	0.359	0	0.0
ONUPHIS EREMITA OCULATA	9	0.646	0	0.0
ONUPHIS NEBULOSA	11	0.789	4	4.938
PARALICHOE SPECIOSA	5	0.359	0	0.0

TREASURE ISLAND MOTEL (STATICA 1) - CONTROL AND EXPERIMENTAL  
8/10/76  
(CONTINUED)

SPECIES	NO. CF IND. (C.)		NO. CF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PHYLLOSCCE ARENAE	5	0.359	0	0.0
PRIONOSPID CRISTATA	69	4.950	0	0.0
RULLIERINEREYS MEXICANA	3	0.215	1	1.235
SCOLAPLCS ARMIGER	14	1.004	5	6.173
SYGAMERA BASSI	5	0.359	0	0.0
SPID PETTIBONEAE	2	0.143	0	0.0
SPIDOPHANES BOMBAY	7	0.502	0	0.0
ARTROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOCHAUSTORIUS SP.	1	0.072	0	0.0
AMPELISCA VERRILLI	3	0.215	0	0.0
COROPHIUM SP.	1	0.072	0	0.0
MICROPROTOPUS SP.	1	0.072	0	0.0
MONOCLODES SP.	5	0.359	0	0.0
PROTCHALSTICRILS SP.	15	1.076	4	4.938
PSEUDOCOAUSTORIUS SP.	8	0.574	1	1.235
PSEUDOCALATYISCHNCPUS SP.	74	5.308	1	1.235
SYNCHELIDIUM SP.	10	0.717	0	0.0
BRACHYURA				
OVALIPES OCELLATUS	1	0.072	0	0.0
PINNIPEDIA RETINENS	3	0.215	0	0.0
CARIDEA				
PROCESSA FEMPHILLI	2	0.143	0	0.0
UNIDENTIFIED SP.	2	0.143	0	0.0
CLMACEA				
CYCLAPSIS SP.	4	0.287	0	0.0
CYCLAPSIS VARIANS	5	0.359	0	0.0
CXYUECSTYLIS SMITHI	1	0.072	0	0.0
ISOPODA				
EDOTEA MONTOSA	3	0.215	0	0.0
MYSIDACEA				
UNIDENTIFIED SP.	1	0.072	0	0.0
OSTRACCA				
UNIDENTIFIED SP.	12	0.861	0	0.0
PENAICEA				
SICYCMA TYPICA	0	0.0	1	1.235
ECHINODERMATA				
ASTEROICEA (STARFISHES)				
ASTROPECTEN ARTICULATUS	1	0.072	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
MELLITA QUINQUESPERFORATA	14	1.004	2	2.469
OPHIURIDEA (BRITTLE STARS)				
OPHIOURUS WUEGENANI	1	0.072	0	0.0
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	2	0.143	0	0.0
CEPHALOCHORDATA (LANCELETS)				
FRANCISCOTOMA FLORIDAE	12	0.861	2	2.469
TOTALS				
NO. SPECIES	1394	72	81	20
NO. IND. PER M2		5576		324
S-W INDEX - H'(LN)		2.3604		2.0322
EVENNESS - J		0.5519		0.6784

TREASURE ISLAND MCTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/18/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.218	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	8	0.582	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	33	2.400	3	1.230
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	59	4.291	3	1.230
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	1	0.073	0	0.0
NATICA PUSILLA	3	0.218	0	0.0
CLIVELLA PULCILLA	5	0.364	0	0.0
TURBINILLA CONRADI	1	0.073	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	17	1.236	0	0.0
LEPTICA SP.	4	0.291	0	0.0
LUCINA MULTILINEATA	11	0.800	0	0.0
PAPYRICEA SOLENIIFORMIS	1	0.073	0	0.0
PERIPLOMA MARGARITACEUM	2	0.145	0	0.0
PITAE SIMPSONI	2	0.145	3	1.230
STRIGILLA MIRABILIS	13	0.945	0	0.0
TELLINA TEXANA	55	4.000	2	0.820
TELLINA VERSICOLOR	79	5.745	18	7.377
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	15	1.091	0	0.0
POLYCHAETA				
AMPHAEJE ACUTIFRONS	1	0.073	0	0.0
APOEICHNESEIC PYGMAEA	0	0.0	1	0.410
ARMANDIA MACULATA	12	0.873	1	0.410
BRANIA WELLESEIENSIS	9	0.655	0	0.0
CAPITELLA CAPITATA	1	0.073	0	0.0
CAPITELLIDES JONESI	1	0.073	1	0.410
CAULLETTIELLA SP.	1	0.073	0	0.0
CERATONEURUS TERRIBILIS	7	0.509	1	0.410
CHCNE SP.	3	0.218	0	0.0
CIOPATRA CUPREA	1	0.073	1	0.410
ETECNE LACTEA	2	0.145	1	0.410
EXOCNE DISPAR	1	0.073	0	0.0
FLABELLIGERA SP.	1	0.073	0	0.0
GLYCERA AMERICANA	3	0.218	1	0.410
GLYCERA DIBRANCHIATA	6	0.436	1	0.410
GLYCERA SP.	4	0.291	0	0.0
GONIATA LITTOREA	1	0.073	0	0.0
LAPLOSCHLOPLOS FOLIOLIS	0	0.0	3	1.230
LARNOTHOE CUNULATA	1	0.073	0	0.0
LUMBERINERIS CRUZENSIS	499	36.291	113	46.311
MAGELONA SP.	1	0.073	0	0.0
MESOCYCTOPTERUS SAGITTABILIS	4	0.291	3	1.230
NEPHIYS BUCERA	1	0.073	0	0.0
NEPHIYS PICTA	6	0.655	0	0.0
ONUPHIS EREMYIA OCULATA	0	0.0	1	0.410

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/18/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>GNUPHIS NEBULOSA</u>	7	0.509	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.073	0	0.0
<u>PARACNICES LYRA</u>	0	0.0	2	C.820
<u>PARACNICES FULGENS</u>	1	0.073	0	0.0
<u>PARAPRIONOSPION PINNATA</u>	1	0.073	2	C.820
<u>PHYLLOCOCE ARENAE</u>	3	0.218	2	C.820
<u>POLYDORA TETRABRANCHIA</u>	1	0.073	1	C.410
<u>PRIONOSPION CRISTATA</u>	200	14.545	43	17.623
<u>RULLIERINEREIS MEXICANA</u>	4	0.291	C	C.0
<u>SCOLOPLCS ARMIGER</u>	30	2.182	7	2.869
<u>SIGALICN ARENICOLA</u>	2	0.145	C	C.0
<u>SIGAMERA BASSI</u>	9	0.655	C	C.0
<u>SPIO PETTIBONEAE</u>	6	0.436	C	C.0
<u>SPIOPHANES BOMBYX</u>	5	0.364	C	C.0
 <u>SIPLUNCULICA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.073	1	C.410
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	12	0.873	0	0.0
<u>AMPELISCA ABDITA</u>	3	0.218	1	C.410
<u>AMPELISCA VERRILLI</u>	15	1.091	3	1.230
<u>ARGISSA SP.</u>	2	0.145	0	0.0
<u>MONOCILCOES SP.</u>	C	0.0	1	0.410
<u>PROIONHALSTORILS SP.</u>	15	1.091	0	0.0
<u>PSELDOHALSTORILS SP.</u>	6	0.436	0	0.0
<u>PSELOPLATYISCHNIDUS SP.</u>	45	3.564	4	1.639
<u>SYNCELIDILM SP.</u>	13	0.945	1	0.410
<u>BRACHYURA</u>				
<u>CALLINECTES SP.</u>	1	0.073	0	C.0
<u>PINNIXIA RETINENS</u>	5	0.364	C	0.0
<u>CALLINANASSIDAE</u>				
<u>CALLINANASSA JAMAIGENSE</u>	0	0.0	3	1.230
<u>CARIDEA</u>				
<u>ERGESSA LEMPELLI</u>	7	0.509	0	0.0
<u>ERGESSA VICINA</u>	3	0.218	1	C.410
<u>CUMACEA</u>				
<u>CYCLAPSIS SP.</u>	5	0.364	0	0.0
<u>CYCLAPSIS VARIANS</u>	12	0.873	4	1.639
<u>ORYZOPSIS STYLI SMITHI</u>	7	0.509	5	2.049
<u>LEPTOSTRACA</u>				
<u>NEBALIA SE.</u>	1	0.073	1	0.410
<u>MYSTACEA</u>				
<u>UNIDENTIFIED SP.</u>	2	0.145	1	C.410
<u>OSTRACCA</u>				
<u>UNIDENTIFIED SP.</u>	10	0.727	2	C.820
<u>PENAEIDAE</u>				
<u>SICYCNIA BREVIROSTRIS</u>	C	0.0	1	C.410
<u>STOMATOPODA</u>				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	C.410
 <u>ECHINODERMATA</u>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.073	0	0.0
<u>ECPHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MELLIA CLINGUESPERECRATA</u>	15	1.091	C	0.0
<u>HOLOTHURIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOSYNAPIA SP.</u>	2	0.145	C	C.0
<u>OPHYURIDEA (BRITTLE STARS)</u>				
<u>OPHIOBRANCHIUM MURDMANI</u>	1	0.073	0	0.0

APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/18/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
UNIDENTIFIED SP.	2	0.145	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.073	0	0.0
CEPHALCHORDATA (LANCELETS)				
BRANCHIOSTOMA FLORIDAE	32	2.327	0	0.0
VERTEBRATA				
PISCES (FISHES)				
SYMPTERUS SP.	1	0.073	0	0.0
TOTALS	1375		244	
NO. SPECIES		80		38
NO. IND. PER M2		5500		576
S-W INDEX - H'(LN)		2.7517		2.1746
EVENNESS - J		0.6280		0.5678

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/24/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIAEIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.248	1	0.187
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	6	0.496	2	0.375
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	25	2.068	9	1.625
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	16	1.323	1	0.187
BRACHIOPODA (LAMP SHELLS)				
GLYPTIDIA PYRAMICATA	0	0.0	1	0.187
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	3	0.248	0	0.0
NATICA PLISILLA	1	0.083	0	0.0
OLIVELLA BULLULA	1	0.083	0	0.0
PELECYPODA (CLAMS)				
ANADARA FLORIDANA	1	0.083	0	0.0
CARDICMYA COSTELLATA	0	0.0	1	0.187
ERVILIA CONCENTRICA	42	3.474	0	0.0
LEPTON SP.	1	0.083	4	0.749
LUCINA MULLINEATA	6	0.744	1	0.187
BAPYDEIA SOLENIIFORMIS	2	0.165	0	0.0
PERILLINA MARGARITACEUM	1	0.083	1	0.187
PITAE SIMPSONI	27	2.233	0	0.0
STRIGILLA MIRABILIS	14	1.158	1	0.187
TELLINA TAMPAENSIS	2	0.165	0	0.0
TELLINA TEXANA	21	1.737	9	1.685
TELLINA VERSICOLOR	78	6.452	23	4.307
VENERIDAE UNIDENTIFIED SP.	6	0.496	0	0.0
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	17	1.406	2	0.375
POLYCHAETA				
APOEICNCSILC PYGMAEA	1	0.083	0	0.0
ABERICCLA CRISTATA	1	0.083	0	0.0
ARMADIA MACULATA	9	0.744	9	1.685
AXIDIMELLA MUCOSA	2	0.165	0	0.0
BRANIA WELFLEETENSIS	7	0.579	0	0.0
CERATINEFIS INRIIABILIS	6	0.496	7	1.311
CHONE SP.	9	0.744	0	0.0
DIOPATRA CUPREA	1	0.083	2	0.375
ETECNE LACIEA	7	0.579	4	0.749
EULALIA SANGUINEA	1	0.083	1	0.187
GLYCERA AMERICANA	4	0.331	3	0.562
GLYCERA DIERANCHIATA	3	0.248	1	0.187
GLYCERA SP.	3	0.248	2	0.375
GLYCINE SOLITARIA	0	0.0	1	0.187
GONIATA LITTOREA	7	0.579	1	0.187
GYPTIS VITIATA	1	0.083	0	0.0
HAPLOSCHOLOPUS FOLIOSUS	1	0.083	0	0.0
ISOLLA PULCHELLA	1	0.083	0	0.0
LUMBERINERIS CRUZENSIS	476	39.371	170	21.835



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/24/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MALACCCEUS INDICUS</u>	0	0.0	1	0.187
<u>MESOCHAETOPTERUS SAGITTARIUS</u>	11	0.910	13	2.434
<u>NEPHYS PICTA</u>	12	0.993	1	0.187
<u>NOTICASTIUS LATERICUS</u>	2	0.165	0	0.0
<u>ONUPHIS EREMITA CULATA</u>	34	2.812	3	0.562
<u>ONUPHIS NEBULOSA</u>	2	0.165	2	0.375
<u>OWENIA FUSIFORMIS</u>	4	0.331	0	0.0
<u>PARANAITES SPECIOSA</u>	3	0.248	1	0.187
<u>PARACNICES LYRA</u>	2	0.165	0	0.0
<u>PARACNIS FULGENS</u>	2	0.165	1	0.187
<u>PARAPRIONOSPIO PINNATA</u>	1	0.083	2	0.375
<u>PHYLLODOCE ARENAE</u>	4	0.331	6	1.124
<u>POLYDORA TETRABRANCHIA</u>	1	0.083	0	0.0
<u>PRIONOSPIO CRISTATA</u>	101	8.354	114	21.348
<u>RULLIERINEREIS MEXICANA</u>	15	1.241	1	0.187
<u>SCOLOPLOS ARMIGER</u>	39	3.226	21	3.933
<u>SCOLOPLOS RUBRA</u>	0	0.0	1	0.187
<u>SIGALION ARENICOLA</u>	1	0.083	0	0.0
<u>SIGAMERA BASSI</u>	2	0.165	0	0.0
<u>SPIO PETTIBONEAE</u>	12	0.993	19	3.558
<u>SPIOCHAETOPTERUS OCULATUS</u>	2	0.165	0	0.0
<u>SPIOPHANES BOMBYX</u>	5	0.414	1	0.187
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	0	0.0	1	0.187
<u>AMPELISCA AEDITA</u>	1	0.083	1	0.187
<u>AMPELISCA VERRILLI</u>	31	2.564	27	5.056
<u>LISTRIELLA SP.</u>	1	0.083	0	0.0
<u>MONOCULODES SP.</u>	1	0.083	0	0.0
<u>PROTOKHAUSTORIUS SP.</u>	4	0.331	1	0.187
<u>PSEUDOKHAUSTORIUS SP.</u>	1	0.083	1	0.187
<u>PSEUDOPLATYISCHNOPUS SP.</u>	8	0.662	31	5.805
<u>SYNCELIDILM SP.</u>	4	0.331	1	0.187
ANCMURA				
<u>ALBINEA PARETII</u>	1	0.083	1	0.187
<u>PETROCHIRUS OTTOGENES</u>	0	0.0	1	0.187
<u>PETROLISTHES GALATHINUS</u>	0	0.0	1	0.187
BRACHYURA				
<u>CALLINECTES SP.</u>	2	0.165	0	0.0
<u>HEPATILS EPHELIICUS</u>	1	0.083	0	0.0
<u>PINNIXIA RETINENS</u>	0	0.0	1	0.187
CARIDEA				
<u>OGYRIDES LIMICOLA</u>	1	0.083	0	0.0
CUNACEA				
<u>CYCLAPSIS SP.</u>	10	0.827	1	0.187
<u>CYCLAESIS VARIANS</u>	3	0.248	2	0.375
<u>CYUPESTYLIS SMITHI</u>	16	1.323	3	0.562
ISCOPCA				
<u>EDOLEA MONIOSA</u>	3	0.248	0	0.0
LEPTOSTRACA				
<u>NEBALIA SP.</u>	2	0.165	1	0.187
OSTRACCEA				
<u>UNIDENTIFIED SP.</u>	13	1.075	1	0.187
PENAEIDAE				
<u>PENAEUS CUORARUM</u>	0	0.0	1	0.187
STENACROPODA				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	1	0.083	0	0.0

ECHINODERMATA  
ASTEROIDAE (STARFISHES)

TREASURE ISLAND MCTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/24/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<del>ASTROPECTEN ARTICULATUS</del>	1	0.083	0	0.0
<del>ECHINOIDEA (SAND DOLLARS; URCHINS)</del>				
<del>MELLITA QUINQUESPERFORATA</del>	6	0.496	0	0.0
<del>MCLOTURIDEA (SEA CUCUMBERS)</del>				
<del>LEPTOSYNAPTIA SP.</del>	5	0.744	1	0.187
<del>OPHIURIDEA (BRITTLE STARS)</del>				
<del>OPHICHRAGMUS WURDEMANI</del>	2	0.165	0	0.0
<del>UNIDENTIFIED SP.</del>	5	0.414	1	0.187
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	2	0.165	0	0.0
CEPHALOCORDATA (LANCELETS)				
BRANCHIOSIGMA FLORIDAE	5	0.744	11	2.060
VERTEBRATA				
PISCES (FISHES)				
LEPOPHIDIUM GRAELLSI	0	0.0	1	0.187
TOTALS	1209		534	
NO. SPECIES		24		60
NO. IND. PER M2		4836		2136
S-B INDEX - H*(LN)		2.8449		2.5827
EVENNESS - J		0.6421		0.6308

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/1/76

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ANEMONIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.130	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	5	0.649	1	0.248
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	20	2.597	7	1.737
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	10	1.299	1	0.248
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PLSILLA	5	0.649	0	0.0
OLIVELLA BULLULA	1	0.130	0	0.0
TEREBRA DISLOCATA	2	0.260	0	0.0
TURBINILLA CORDATA	1	0.130	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	30	3.896	1	0.248
LEPTON SP.	0	0.0	4	0.993
LUCINA MULTILINEATA	11	1.429	0	0.0
LYNSIA H. FLORICANA	3	0.390	0	0.0
PAPYRIDEA SOLENIIFORMIS	1	0.130	0	0.0
PITAE SIMPSONI	1	0.130	0	0.0
SEMELE PROFICUA	4	0.519	3	0.744
SYRIGILLA MIRABILIS	17	2.208	0	0.0
TELLINA IRIS	0	0.0	1	0.248
TELLINA VERSICOLOR	58	7.532	32	7.940
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	16	2.078	2	0.496
POLYCHAETA				
APCERICACSEIC PYGMAEA	1	0.130	0	0.0
ARICIDEA WASSI	1	0.130	0	0.0
ARMANIA MACULATA	2	0.260	0	0.0
AXICHELLA MUCOSA	2	0.260	0	0.0
BRANCHICASYCHIS AMERICANA	1	0.130	0	0.0
BRANIA BELLEFLEETENSIS	3	0.390	1	0.248
CERATONEREIS TERRIBILIS	16	2.078	14	3.474
CHAETILZNE GAYHEALIA	1	0.130	0	0.0
CHCNE SP.	6	0.779	3	0.744
CISTENIDES GULDII	1	0.130	0	0.0
ETECNE LACTEA	1	0.130	3	0.744
GLYCERA CIBRANCHIATA	3	0.390	1	0.248
GLYCERA SP.	2	0.260	0	0.0
GONIA LITTOREA	3	0.390	2	0.496
HAPLOSCLOPHOS FRAGILIS	4	0.519	0	0.0
LUMBERNERIS CRUZENSIS	283	36.753	207	51.365
MESOCHAETOPTERUS SAGITTARIUS	8	1.039	7	1.737
NEANTIES ACUMINATA	2	0.260	0	0.0
NEANTIES SUCCINEA	3	0.390	0	0.0
NEPHYS EUCERA	1	0.130	1	0.248
NEPHYS PICTA	17	2.208	3	0.744
CNUPIIS EREMITA OCULATA	17	2.208	3	0.744
CUNIA FUSIFORMIS	1	0.130	0	0.0
PARALNALES LYRA	1	0.130	1	0.248

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/1/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>PARAPEIGNOSPIC PINNATA</u>	2	0.260	3	0.744
<u>PISTA PALMATA</u>	0	0.0	1	0.248
<u>POECILOCEPHEUS JOHNSONI</u>	0	0.0	2	0.496
<u>PRIONOSPION CRISTATA</u>	32	4.156	37	5.181
<u>PULLIDINEREIS MEXICANA</u>	21	2.727	9	2.233
<u>SCOLELEPIS TEXANA</u>	1	0.130	0	0.0
<u>SCOLLELIS ARMIGER</u>	50	6.494	17	4.218
<u>SIGAMERA TENTACULATA</u>	0	0.0	3	0.744
<u>SPION PETTICONEAE</u>	17	2.208	1	0.248
<u>SPIONCHAETOPTERUS OCULATUS</u>	3	0.390	0	0.0
<u>SPICEPLANES BOMBAYX</u>	6	0.779	2	0.496
<u>SIPUNCULICA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.130	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOCALANUS SP.</u>	9	1.169	0	0.0
<u>AMPELISCA ABDITA</u>	1	0.130	0	0.0
<u>AMPELISCA VERRILLI</u>	13	1.688	7	1.737
<u>COROPHUM SP.</u>	1	0.130	0	0.0
<u>MONOCLODES SP.</u>	0	0.0	4	0.993
<u>PROTOMALSTORUS SP.</u>	3	0.390	0	0.0
<u>PSEUDOMALSTORUS SP.</u>	4	0.519	0	0.0
<u>PSEUDOPALATISCHNOPUS SP.</u>	2	0.260	3	0.744
<u>SYNGELIDUM SP.</u>	2	0.260	0	0.0
ANOMURA				
<u>ALBUEA PARETI</u>	1	0.130	0	0.0
BRACHYLARA				
<u>CALLINECTES SP.</u>	2	0.260	0	0.0
<u>PINNIXIA RETINENS</u>	1	0.130	0	0.0
CALLINASSIDAE				
<u>CALLINASSA JAMAICENSE</u>	2	0.260	0	0.0
CARIDEA				
<u>LATHEUTES PARVULUS</u>	1	0.130	0	0.0
<u>PROCESSA VICINA</u>	1	0.130	0	0.0
CLMACEA				
<u>CYCLAPSIS VARIANS</u>	1	0.130	2	0.496
<u>ORYZOPSIS SMITHI</u>	2	0.260	4	0.993
MYSIDACEA				
UNIDENTIFIED SP.	0	0.0	4	0.993
OSTRACODA				
UNIDENTIFIED SP.	6	0.779	4	0.993
STOMATOPODA				
<u>ACANTHOSQUILLA BIRMINIENSIS</u>	2	0.260	0	0.0
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECIEN ARTICULATUS</u>	1	0.130	0	0.0
ECHINOIDEA (SAND DOLLARS, URCHINS)				
<u>HELLITA QUINQUESPERFORATA</u>	3	0.390	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTIA SP.</u>	1	0.130	2	0.496
OPHIURIDEA (BRITTLE STARS)				
<u>OPHIOBRANCHIUS BURDEMANI</u>	4	0.519	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	4	0.519	0	0.0
CEPHALOCORDATA (LANCELETS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
5/1/76  
(CONTINUED)

SPECIES	NO. CF IND. (C)		NO. CF INC. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
BRANCHIOSIOMA FLORIDAE	4	0.519	0	0.0
TOTALS	770		403	
NO. SPECIES		74		38
NO. IND. PER 42		3080		1612
S-M INDEX - H' (LN)		2.8922		2.1365
EVENNESS - J		0.6720		0.5873

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/8/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	4	0.708	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.177	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	23	4.071	6	1.786
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.708	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	2	0.354	0	0.0
CYLICHNELLA BIDENTATA	1	0.177	1	0.298
NATICA PUSILLA	2	0.354	1	0.298
OLIVELLA BULLULA	1	0.177	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	12	2.124	1	0.298
LEPTON SP.	1	0.177	2	0.595
LUCINA MULTIILINEATA	17	3.009	0	0.0
PAPYRIDEA SOLENIFORMIS	1	0.177	0	0.0
PERIPLCMA MARGARITACEUM	6	1.062	0	0.0
PITAR SIMPSONI	1	0.177	0	0.0
SEMELE PROFICUA	2	0.354	1	0.298
STRIGILLA MIRABILIS	3	0.531	0	0.0
TELLINA IRIS	0	0.0	1	0.298
TELLINA TEXANA	0	0.0	9	2.679
TELLINA VERSICOLOR	37	6.549	15	4.464
VENERIDAE UNIDENTIFIED SP.	3	0.531	1	0.298
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	10	1.770	1	0.298
POLYCHAETA				
APOPELICACSPIQ PYGMAEA	1	0.177	4	1.190
ARICIDEA SP.	1	0.177	0	0.0
ARMANDIA AGILIS	0	0.0	2	0.595
ARMANDIA MACULATA	3	0.531	1	0.298
AXICHELLEA MUCCSA	1	0.177	0	0.0
FRANIA WELFLEETENSIS	1	0.177	0	0.0
CAPITELLIDES JONESI	1	0.177	0	0.0
CERATONEREIS IRRITABILIS	18	3.186	11	3.274
CERATONEREIS MIRABILIS	1	0.177	2	0.595
CHAETILINE GAYHEADIA	3	0.531	0	0.0
CHONE SP.	5	0.885	0	0.0
CISTENIDES GULDII	4	0.708	0	0.0
ETHECNE LACTEA	1	0.177	0	0.0
EULALIA SANGUINEA	1	0.177	0	0.0
GLYCERA CIERANCHIATA	5	0.885	1	0.298
GONIATA LITTOREA	15	2.655	1	0.298
EAPLISCLOPLCS ROBUSTUS	1	0.177	0	0.0
HARMOTICE LUNULATA	1	0.177	0	0.0
ISOLIA PULCELLA	2	0.354	0	0.0
LUMEFINERIS CRUZENSIS	150	26.549	112	32.333
LUMEFINERIS TETRAURA	3	0.531	0	0.0
PAGELCNA SP.	3	0.531	0	0.0

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/8/76

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
MEDICMASTUS CALIFORNIENSIS	3	0.531	0	0.0
MESOCYCTOPTERUS SAGITTARIUS	4	0.708	1	0.298
NEANTHES SUCCINEA	0	0.0	2	0.595
NEPHYS PICTA	15	2.655	1	0.298
NOTOMASTUS HEMIPODUS	0	0.0	1	0.298
NOTOMASTUS LATERICEUS	3	0.531	0	0.0
ONUPHIS EREMITA OCULATA	28	4.956	14	4.167
ONUPHIS NEBULOSA	1	0.177	0	0.0
OWENIA FUSIFORMIS	2	0.354	0	0.0
PARANATHES SPECIOSA	1	0.177	1	0.298
PARACNIDES LYRA	9	1.593	0	0.0
PARACNIS FULGENS	1	0.177	0	0.0
PARAPRIONOSPION PINNATA	4	0.708	9	2.679
PHYLLODOCE ARENAE	10	1.770	8	2.381
POECILOCHAETUS JOHNSONI	0	0.0	2	0.595
PRIONOSPION CRISTATA	17	3.009	26	7.738
RULLIERINEREIS MEXICANA	15	3.363	16	4.762
SCOLOPLUS ARMIGER	22	3.894	33	9.821
SIGALICA ARENICOLA	2	0.354	0	0.0
SIGAMMA BASSI	1	0.177	0	0.0
SIGAMBRA TENTACULATA	2	0.354	0	0.0
SPIC PECTIBONEAE	1	0.177	14	4.167
SPICHAETOPTERUS OCULATUS	0	0.0	1	0.298
SPICPHANES BOMBIX	8	1.416	7	2.083
SIPUNCULICA (PEANUT WORMS)				
GOLFINGIA TRICHOCEPHALA	2	0.354	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPEDIA				
AMPELISCA ABDITA	1	0.177	1	0.298
AMPELISCA VERRILLI	2	0.354	4	1.190
ARGISSA SP.	0	0.0	1	0.298
COROPHIUM SP.	0	0.0	1	0.298
MONICULODES SP.	2	0.354	0	0.0
PARAPHOXUS SP.	2	0.354	0	0.0
PSEUDOPLOPUS SP.	1	0.177	1	0.298
SYNCELIUM SP.	3	0.531	0	0.0
ANOMURA				
ALPHEA PAREII	1	0.177	2	0.595
ERACHYURA				
PINNAXIA RETINENS	1	0.177	0	0.0
CARIDEA				
PROCESSA HEMPHILLI	3	0.531	0	0.0
PROCESSA VICINA	3	0.531	0	0.0
CUMACEA				
CYCLAPSIS SP.	6	1.062	1	0.298
CYCLAPSIS VARIANS	2	0.354	1	0.298
CYLOSTYLIS SMITHI	5	0.885	4	1.190
LEPTOSTRACA				
NEBALIA SP.	3	0.531	1	0.298
MYSDACEA				
UNIDENTIFIED SP.	3	0.531	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	5	0.885	1	0.298
PENAEIDAE				
PENAEUS OLICRAEUM	1	0.177	0	0.0
TRACHYPENAEUS CONSTRICTUS	1	0.177	2	0.595
TANAIDACEA				
UNIDENTIFIED SP.	1	0.177	0	0.0

## ECHINODERMATA

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
5/8/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HOLOTHUROIDEA (SEA CUCUMBERS) <u>LEPTOSYNAPTE SP.</u>	10	1.770	0	0.0
HEMICHORDATA ENTEROPNEUSTA (ACORN WORMS) UNIDENTIFIED SP.	1	0.177	0	0.0
CEPHALCHORDATA (LANCELETS) <u>BRANCHIOSTOMA FLORIDAE</u>	1	0.177	7	2.083
TOTALS	565		336	
NO. SPECIES	83		47	
NO. IND. PER M2	2260		1344	
S-W INDEX - H' (LN)	3.3627		2.7387	
EVENNESS - J	0.7610		0.7113	



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/21/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.256	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.128	1	0.433
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	21	2.685	7	3.030
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	9	1.151	0	0.0
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	2	0.256	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
CYLICHNELLA BIDENTATA	0	0.0	1	0.433
NATICA PUSILLA	3	0.384	0	0.0
CLIVELLA BULLULA	3	0.384	1	0.433
PELECYFEDA (CLAMS)				
ANADARA FLORIDANA	1	0.128	0	0.0
ERVILIA CONCENTRICA	3	0.384	0	0.0
LAEVICARDIUM PICTUM	1	0.128	0	0.0
LUCINA MULTILINEATA	3	0.384	3	1.299
SYRIGILLA MIRABILIS	5	0.639	0	0.0
TELLINA IRIS	4	0.512	3	1.299
TELLINA TEXANA	6	1.023	1	0.433
TELLINA VERSICOLOR	31	3.964	16	6.926
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	15	1.918	0	0.0
POLYCHAETA				
AMPHARETE ACUTIFRONS	1	0.128	0	0.0
APORRIONOSPION CYGMAEA	0	0.0	3	1.299
ARICIDEA FRAGILIS	1	0.128	0	0.0
ARICIDEA SP.	2	0.256	0	0.0
ARMANDIA AGILIS	2	0.256	0	0.0
ARMANDIA MACULATA	3	0.384	1	0.433
AXIOHELLA MUCOSA	1	0.128	0	0.0
BRANIA BELLEFLEETENSIS	6	1.023	0	0.0
CAPITELLA CAPITATA	0	0.0	8	3.463
CAULIERELLA SP.	2	0.256	0	0.0
CERATONEREIS IMMITABILIS	17	2.174	7	3.030
CERATONEREIS MIRABILIS	2	0.256	0	0.0
CHAETOCNE GAYHEADIA	1	0.128	0	0.0
CHONE SP.	17	2.174	1	0.433
CISTENIDES GULDII	1	0.128	0	0.0
DICPATRA CUPREA	1	0.128	1	0.433
ELECTE LACTEA	3	0.384	0	0.0
GLYCERA AMERICANA	4	0.512	0	0.0
GLYCERA DIBRANCHIATA	2	0.256	1	0.433
GLYCINDE SOLITARIA	1	0.128	0	0.0
GONIATA LITTOREA	3	0.384	0	0.0
GRUENLEPIS MEXICANA	1	0.128	0	0.0
SYPHIS VITTATA	1	0.128	0	0.0
FABRICIOLUS FOLIOSUS	2	0.256	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/21/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>HAPLICSCILLICPLCS FRAGILIS</u>	6	0.767	0	0.0
<u>HAPLICSCILLICPLCS ROBUSTUS</u>	4	0.512	0	0.0
<u>HEPTEMASTUS FILIFORMIS</u>	1	0.128	1	0.433
<u>LUMBERINERIS CRUZENSIS</u>	315	40.281	70	30.303
<u>LUMBERINERIS TETRAURA</u>	9	1.151	0	0.0
<u>MAGELICHA LONGICORNIS</u>	0	0.0	1	0.433
<u>MEDICMASTUS CALIFORNIENSIS</u>	2	0.256	0	0.0
<u>MESOCMAETICTEFUS SAGITTARIUS</u>	2	0.256	1	0.433
<u>NEANTHES SUCCINEA</u>	0	0.0	1	0.433
<u>NEPHIYS BUCFA</u>	1	0.128	0	0.0
<u>NEPHIYS FICIA</u>	7	0.895	1	0.433
<u>NOTICMASTUS HEMIPODUS</u>	1	0.128	0	0.0
<u>NOTICMASTUS LATERICEUS</u>	1	0.128	0	0.0
<u>ONUPHIS EREMITA CCULATA</u>	26	3.325	7	3.030
<u>ONUPHIS NEBULOSA</u>	1	0.128	0	0.0
<u>OWENIA FUSIFORMIS</u>	3	0.384	0	0.0
<u>PARANATHES SPECIOSA</u>	1	0.128	0	0.0
<u>PARACNIDES LYRA</u>	1	0.128	1	0.433
<u>PARACNIS FULGENS</u>	3	0.384	0	0.0
<u>PARACNIS SP.</u>	3	0.384	0	0.0
<u>PARAPRIONOSPIO PINNATA</u>	0	0.0	2	0.866
<u>PHYLLODOCE ARENAE</u>	7	0.895	10	4.329
<u>PRIONOSPIO CRISTATA</u>	25	3.197	12	5.195
<u>RULLIERINERIS MEXICANA</u>	25	3.197	7	3.030
<u>SCOLELEPIS TEXANA</u>	1	0.128	0	0.0
<u>SCOLICPLCS ARMIGER</u>	40	5.115	7	3.030
<u>SIGAMBRA BASSI</u>	3	0.384	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	5	2.165
<u>SPIO PETTIBONEAE</u>	5	1.151	4	1.732
<u>SPIOPHANES BCMBYX</u>	5	0.639	4	1.732
<u>STHENELAIS BOA</u>	0	0.0	1	0.433
<u>STREPTOSYLLIS ARENAE</u>	1	0.128	0	0.0
SIPUNCULICA (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	2	0.256	0	0.0
ARTHROPOCA (CRUSTACEANS)				
AMPHIPCCA				
<u>ACANTHOHALSTORIUS SP.</u>	10	1.279	0	0.0
<u>AMPELISCA ABDITA</u>	4	0.512	0	0.0
<u>AMPELISCA VERRILLI</u>	19	2.430	6	2.597
<u>ARGISSA SP.</u>	0	0.0	1	0.433
<u>CARCIDIUM SP.</u>	3	0.384	0	0.0
<u>LISTEJELLA SP.</u>	1	0.128	1	0.433
<u>MONOCULODES SP.</u>	4	0.512	0	0.0
<u>PROTODHAUSTORIUS SP.</u>	1	0.128	0	0.0
<u>PSEUDODHAUSTORIUS SP.</u>	1	0.128	0	0.0
<u>PSEUDOPLATYISCHNOPUS SP.</u>	7	0.895	7	3.030
<u>SYNCHELIDIUM SP.</u>	2	0.256	0	0.0
ANOMURA				
<u>ALBUNEA PARETII</u>	1	0.128	0	0.0
CARIDEA				
<u>PROCESSA FEMPHILLI</u>	2	0.256	1	0.433
CUMACEA				
<u>CYCLAESIS SP.</u>	2	0.256	0	0.0
<u>CYCLAESIS VARIANS</u>	0	0.0	2	0.866
<u>XYUECTYLLIS SMITHI</u>	3	0.384	1	0.433
LEPTOSTRACA				
<u>NERALIA SP.</u>	1	0.128	1	0.433
OSTRACCCA				
UNIDENTIFIED SP.	7	0.895	14	6.061

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
5/21/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PENAEIDAE				
<u>SICYPTIA BREVIROSTRIS</u>	1	0.128	2	0.866
<u>TRACYPENAEUS CONSTRICTUS</u>	4	0.512	1	0.433
ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA QUINQUESPERFORATA</u>	4	0.512	0	0.0
HOLOTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTE SP.</u>	5	0.639	3	1.299
OPHTHURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
CEPHALOCORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	5	0.639	1	0.433
TOTALS	782		231	
NO. SPECIES		89		45
NO. IND. PER M2		3128		524
S-W INDEX - H' (LN)		2.9755		2.9440
EVENNESS - J		0.6629		0.7734

TREASLE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/4/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.164
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	27	3.466	17	2.787
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.513	1	0.164
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	1	0.128	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>CYLICHNELLA BIDENTATA</u>	0	0.0	1	0.164
<u>OLIVA SAYANA</u>	1	0.128	0	0.0
<u>OLIVELLA FUSILLA</u>	1	0.128	0	0.0
<u>POLINICES DUPLICATUS</u>	1	0.128	0	0.0
PELECYFODA (CLAMS)				
<u>ANADARA FLORIDANA</u>	3	0.385	0	0.0
<u>ERVILIA CONCENTRICA</u>	3	0.385	1	0.164
<u>LUCINA MULTILINEATA</u>	19	2.439	25	4.754
<u>PERIPLOMA MARGARITACEUM</u>	8	1.027	4	0.656
<u>PITAR SIMPSONI</u>	1	0.128	0	0.0
<u>STRIGILLA MIRABILIS</u>	1	0.128	0	0.0
<u>TELLINA AEGUISIRIATA</u>	0	0.0	1	0.164
<u>TELLINA IRIS</u>	3	0.385	2	0.328
<u>TELLINA TEXANA</u>	5	0.642	4	0.656
<u>TELLINA VESICOLOR</u>	33	4.236	19	3.115
VENERIDAE UNIDENTIFIED SP.	1	0.128	1	0.164
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	23	2.953	21	3.443
POLYCHAETA				
<u>AGLAPHANTUS VERRILLI</u>	1	0.128	0	0.0
<u>AMPHARETE ACUTICORNIS</u>	1	0.128	1	0.164
<u>APOPRIONOSPION PYGMAEA</u>	1	0.128	0	0.0
<u>ARICIDEA FRAGILIS</u>	1	0.128	1	0.164
<u>ARICIDEA SP.</u>	1	0.128	0	0.0
<u>ARMANDIA AGILIS</u>	0	0.0	1	0.164
<u>ARMANDIA MACULATA</u>	0	0.0	3	0.492
<u>ASYCHIS CAROLINAE</u>	2	0.257	19	3.115
<u>BRANIA BELLEFLEETENSIS</u>	2	0.257	3	0.492
<u>CAPITELLA CAPITATA</u>	0	0.0	2	0.328
<u>CAULERYELLA SP.</u>	0	0.0	1	0.164
<u>CERATONEREIS IRRITABILIS</u>	27	3.466	44	7.213
<u>CERATONEREIS MIRABILIS</u>	0	0.0	2	0.328
<u>CHAETONE GAYHEADIA</u>	0	0.0	2	0.328
<u>CHAETONE SETOSA</u>	1	0.128	0	0.0
<u>CHONE SP.</u>	6	0.770	3	0.492
<u>CISTENIDES GOULDII</u>	4	0.513	2	0.328
<u>DASYBRANCHIUS LUMBRICOIDES</u>	0	0.0	1	0.164
<u>DIOPATRA CIPREA</u>	1	0.128	1	0.164
<u>ETEONE LACSEA</u>	1	0.128	4	0.656
<u>GLYCERA AMERICANA</u>	1	0.128	4	0.656
<u>GLYCERA DIBRANCHIATA</u>	5	0.642	2	0.328
<u>GLYCERA SP.</u>	0	0.0	1	0.164
<u>GONIACA LITIGREA</u>	15	1.926	1	0.164

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/4/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>GYPTIS VITIATA</u>	2	0.257	2	0.328
<u>HAPLISCILLIUS FOLIOSUS</u>	2	0.257	5	0.820
<u>HAPLISCILLIUS FRAGILIS</u>	10	1.284	1	0.164
<u>HAPLISCILLIUS ROBUSTUS</u>	1	0.128	1	0.164
<u>HABRILICE LUNULATA</u>	1	0.128	0	0.0
<u>HEYTELMASTUS FILIFORMIS</u>	0	0.0	4	0.656
<u>ISCLIA PULCHELLA</u>	1	0.128	0	0.0
<u>LUMBERNEIS CRUZENSIS</u>	196	25.160	48	7.869
<u>LUMBERNEIS TETRAURA</u>	46	5.905	27	4.426
<u>MACRICLYMENE ZONALIS</u>	2	0.257	1	0.164
<u>MAGELIA SP.</u>	1	0.128	0	0.0
<u>MEDICMASTUS CALIFORNIENSIS</u>	1	0.128	3	0.492
<u>MEGALCMA BIOCULATUM</u>	0	0.0	4	0.656
<u>MESOCYPTERUS SAGITTARIUS</u>	1	0.128	1	0.164
<u>MYCHESPIO PIGMENTATA</u>	1	0.128	0	0.0
<u>MYRICELE SP.</u>	0	0.0	1	0.164
<u>NEANTHES SUCCINEA</u>	1	0.128	0	0.0
<u>NEPHYS PICTA</u>	11	1.412	2	0.328
<u>NOTICMASTUS HEMIPODUS</u>	5	0.642	3	0.492
<u>NOTICMASTUS LATERICEUS</u>	1	0.128	0	0.0
<u>ONUPHIS EREMITA OCLATA</u>	36	4.621	22	3.607
<u>ONUPHIS NEBULOSA</u>	1	0.128	0	0.0
<u>OWENIA FUSIFORMIS</u>	1	0.128	7	1.148
<u>PARANICES LYRA</u>	15	1.926	7	1.148
<u>PARANICES FULGENS</u>	6	0.770	1	0.164
<u>PARANICES SP.</u>	4	0.513	1	0.164
<u>PARAFICINIS PINNATA</u>	4	0.513	20	3.279
<u>PHYLLICE ARENAE</u>	2	0.257	9	1.475
<u>POLYCHITES LUPINA</u>	1	0.128	0	0.0
<u>PRICINIS CRISTATA</u>	55	7.060	51	8.361
<u>BULLIERINERIS MEXICANA</u>	29	3.723	17	2.787
<u>SCILLIUS ARMIGER</u>	47	6.033	11	1.803
<u>SCILLIUS EUERA</u>	1	0.128	2	0.328
<u>SIGALIN ARENICOLA</u>	1	0.128	0	0.0
<u>SIGAMERA TENTACULATA</u>	0	0.0	21	3.443
<u>SPIO PETTIBONEAE</u>	3	0.385	3	0.492
<u>SPIOPTANES BOMBYX</u>	13	1.669	11	1.803
<u>SIMENILAIUS BOA</u>	0	0.0	1	0.164
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	3	0.385	6	0.984
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>AMPELISCA AEDITA</u>	5	0.642	12	1.967
<u>AMPELISCA VERRILLI</u>	16	2.054	15	2.459
<u>CONCELIUM SP.</u>	0	0.0	1	0.164
<u>LISTERELLA SP.</u>	0	0.0	3	0.492
<u>PONCULIDES SP.</u>	2	0.257	1	0.164
<u>PARAPLOXUS SP.</u>	1	0.128	0	0.0
<u>PSEUDHAUSTORIUS SP.</u>	0	0.0	2	0.328
<u>PSEUDOPALYPSCHNOPUS SP.</u>	2	0.257	4	0.656
<u>ANOMURA</u>				
<u>ALBUEA PARETI</u>	4	0.513	12	1.967
<u>EUCERAMUS PRAELONGUS</u>	1	0.128	0	0.0
<u>BRACHYURA</u>				
<u>CALLINectes SAPIDUS</u>	1	0.128	0	0.0
<u>PERSEPHONA P. AQUILONARIS</u>	1	0.128	0	0.0
<u>PINNIXIA SAYANA</u>	0	0.0	3	0.492
<u>CALLINANASSIDAE</u>				
<u>CALLINANASSA JAMAICENSE</u>	2	0.257	1	0.164

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/4/76  
(CONTINUED)

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERC. II	TOTAL	PERCENT
CARIDEA				
<u>PROCESSA HEMPHILLI</u>	2	0.257	2	0.328
CUMACEA				
<u>CYCLAPSIS SP.</u>	6	0.770	2	0.328
<u>CYCLAPSIS VARIANS</u>	0	0.0	2	0.328
<u>OXYUDOSTYLIS SMITHI</u>	3	0.385	5	0.820
MYSTACEA				
UNIDENTIFIED SP.	2	0.257	4	0.656
OSTRACODA				
UNIDENTIFIED SP.	6	0.770	14	2.295
PENAEIDAE				
<u>SICYONIA BREVIROSTRIS</u>	1	0.128	1	0.164
<u>TRACHYPENAEUS CONSTRICTUS</u>	6	0.770	1	0.164
TANAIDACEA				
UNIDENTIFIED SP.	0	0.0	1	0.164
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	2	0.257	3	0.492
HCLOTUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTEA SP.</u>	5	0.642	26	4.262
OPHIURIDEA (BRITTLE STARS)				
<u>OPHIOPHRAGMUS MURDEMANNI</u>	1	0.128	0	0.0
CEPHALOCHOERDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	0	0.0	2	0.328
TOTALS	779		610	
NO. SPECIES		87		85
NO. IND. PER M2		3116		2440
S-B INDEX - H*(LN)		3.2650		3.7160
EVENNESS - J		0.7311		0.8364

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/18/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.102	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.204	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	15	1.534	4	1.423
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	32	3.272	3	1.068
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
OLIVA SAYANA	1	0.102	0	0.0
CLIVELLA BULLULA	0	0.0	1	0.356
TEREBA DISLOCATA	3	0.307	0	0.0
PELECYFODA (CLAMS)				
ERVILIA CONCENTRICA	6	0.613	1	0.356
LUCINA MULTILINEATA	5	0.511	11	3.915
MACRACALLISTA NIMBOSA	1	0.102	0	0.0
PERIPLOMA MARGARITACEUM	1	0.102	0	0.0
STRIGILLA MIRABILIS	17	1.738	0	0.0
TELLINA IRIS	2	0.204	0	0.0
TELLINA TEXANA	5	0.520	1	0.356
TELLINA VERSICOLOR	26	2.658	5	1.779
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	19	1.943	3	1.068
PCLYCHAETA				
APOPRIONOSPION PYGMAEA	0	0.0	3	1.068
ARTICIDEA CERRETTI	1	0.102	0	0.0
ARTICIDEA SUECICA	7	0.716	0	0.0
ARMANCIA AGILIS	1	0.102	1	0.356
ARMANDIA MACULATA	10	1.022	0	0.0
BRANIA BELLIFLETENSIS	13	1.329	0	0.0
CERATONEREIS IRRITABILIS	5	0.511	11	3.915
CHAETOCNE SETIOSA	0	0.0	2	0.712
CHONE SP.	10	1.022	0	0.0
DIOPATRA CUPREA	1	0.102	0	0.0
DORVILLEA SOCIABILIS	3	0.307	0	0.0
EIEONE LACTEA	4	0.409	1	0.356
GLYCERA AMERICANA	9	0.920	9	3.203
GLYCERA DIBRANCHIATA	2	0.204	0	0.0
GONIACA LITICREA	1	0.102	0	0.0
GYPTIS VITATA	2	0.204	0	0.0
HAPLOSCILLIPUS FOLIOSUS	4	0.409	2	0.847
HAPLOSCILLIPUS FRAGILIS	1	0.102	0	0.0
HAPLOSCILLIPUS ROBUSTUS	1	0.102	0	0.0
HARMOCHE LUNULATA	0	0.0	1	0.356
LUMBERINERIS CRUZENSIS	44	45.194	72	25.623
LUMBERINERIS TETRAURA	2	0.204	0	0.0
LAGELINA SP.	1	0.102	0	0.0
MEDICMASTUS CALIFORNIENSIS	1	0.102	1	0.356
NEANITES ACUMINATA	1	0.102	1	0.356
NEPHEYS PICTA	10	1.022	2	0.712
NOTOMASTUS HEMIPODUS	2	0.204	4	1.423

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/18/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTICMASTUS LATERICEUS</u>	0	0.0	1	0.356
<u>CNUPHIS EREMITA CCULATA</u>	1	0.102	6	2.135
<u>CRIBRIA FISERI</u>	1	0.102	0	0.0
<u>LEVENIA FUSIECRMIS</u>	1	0.102	0	0.0
<u>PARACALLES SPECIOSA</u>	2	0.204	0	0.0
<u>PARACNIDES LYRA</u>	1	0.102	0	0.0
<u>PARACNIS FULGENS</u>	2	0.204	0	0.0
<u>PARACNIS SP.</u>	1	0.102	0	0.0
<u>PARAPRIONOSPION PINNATA</u>	1	0.102	3	1.068
<u>PHYLLODOCE ARENAE</u>	0	0.0	2	0.712
<u>PRIONOSPION CRISTATA</u>	77	7.873	27	9.609
<u>RULLIERINEREIS MEXICANA</u>	15	1.534	14	4.982
<u>SCOLELEPIS TEXANA</u>	1	0.102	0	0.0
<u>SCOLOPLOS ARMIGER</u>	37	3.783	6	2.135
<u>SCOLOPLOS RUBRA</u>	1	0.102	0	0.0
<u>SIGAMBRA BASSI</u>	3	0.307	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	3	1.068
<u>SPION PETTIBONEAE</u>	2	0.204	2	0.712
<u>EPIOPLANES BOMBYX</u>	3	0.307	4	1.423
<b>ARTHROPODA (CRUSTACEANS)</b>				
<b>AMPHIPODA</b>				
<u>AMPELISCA VERRILLI</u>	14	1.431	29	10.320
<u>ARGISSA SP.</u>	1	0.102	0	0.0
<u>LISIBIELLA SP.</u>	5	0.511	3	1.068
<u>MONOCLODES SP.</u>	19	1.943	6	2.135
<u>PARAPHOXUS SP.</u>	1	0.102	0	0.0
<u>PHOTIS SP.</u>	1	0.102	0	0.0
<u>PROTICHAUSTORIUS SP.</u>	7	0.716	0	0.0
<u>PSEUDICHAUSTORIUS SP.</u>	1	0.102	0	0.0
<u>PSEUDOPLATYLSCHNOPUS SP.</u>	28	2.863	20	7.117
<u>SYNCELIDIUM SP.</u>	3	0.307	1	0.356
<u>TIRON BISCOCELLATUS</u>	0	0.0	1	0.356
<b>ANCMURA</b>				
<u>ALBUEA FARETII</u>	3	0.307	4	1.423
<u>EUCERATUS PRAELONGUS</u>	1	0.102	2	0.712
<u>PAGUELS SP.</u>	1	0.102	1	0.356
<b>CALLINANASSIDAE</b>				
<u>CALLINANASSA JAMAICENSE</u>	0	0.0	1	0.356
<b>CARTOEA</b>				
<u>UGYRIDES LIMICOLA</u>	0	0.0	1	0.356
<b>CUMACEA</b>				
<u>CYCLAPSIS SP.</u>	31	3.170	1	0.356
<u>OXYUROSSTYLIS SMITHI</u>	0	0.0	1	0.356
<b>MYSTICACEA</b>				
<u>UNIDENTIFIED SP.</u>	1	0.102	0	0.0
<b>OSTRACCA</b>				
<u>UNIDENTIFIED SP.</u>	8	0.818	1	0.356
<b>ECHINODERMATA</b>				
<b>ASTEROIDEA (STARFISHES)</b>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.102	0	0.0
<b>ECHINOIDEA (SAND DOLLARS; URCHINS)</b>				
<u>MELLITA QUINQUESPERFORATA</u>	4	0.409	0	0.0
<b>HOLOTHUROIDEA (SEA CUCUMBERS)</b>				
<u>LEPTOSYNDAETA SP.</u>	1	0.102	1	0.356
<b>OPHTHURICEA (BRITTLE STARS)</b>				
<u>OPHTHURICUS BURDEMANI</u>	2	0.204	0	0.0
<u>UNIDENTIFIED SP.</u>	1	0.102	0	0.0
<b>CEPHALOCORDATA (LANCELETS)</b>				



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.397	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.265	2	0.391
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	18	2.384	6	1.174
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.060	1	0.196
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	1	0.132	0	0.0
OLIVELLA BULLATA	1	0.132	3	0.587
TEREBA DISLOCATA	1	0.132	0	0.0
PELECYFODA (CLAMS)				
CARDIOMYA COSTELLATA	0	0.0	1	0.196
ERVILIA CONCENTRICA	1	0.132	0	0.0
LUCINA MULTILINEATA	2	0.265	14	2.740
SEMELE PROFICUA	0	0.0	1	0.196
STRIGILLA MIRABILIS	10	1.325	0	0.0
TELLINA A. TAYLORIANA	0	0.0	1	0.196
TELLINA IRIS	0	0.0	3	0.587
TELLINA TEXANA	4	0.530	0	0.0
TELLINA VERSICOLOR	16	2.119	7	1.370
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	4.636	1	0.196
POLYCHAETA				
APOPEIRONOSPLO PYGMAEA	1	0.132	0	0.0
ARICIDEA SUECICA	5	0.662	0	0.0
ARMANDIA MACULATA	5	0.662	2	0.391
BRANIA CLAVATA	1	0.132	0	0.0
BRANIA WELFLEETIENSIS	12	1.589	0	0.0
CAULLERYELLA SP.	1	0.132	0	0.0
CERATONEREIS IRRITABILIS	11	1.457	18	3.523
CHAELOZOE SEIOSA	1	0.132	1	0.196
CHONE SP.	7	0.927	0	0.0
ETEOPE LACTEA	2	0.265	0	0.0
EUNICE ANTENNATA	1	0.132	0	0.0
EURYTHOE COMPLANATA	0	0.0	1	0.196
GLYCERA AMERICANA	7	0.927	2	1.566
GLYCERA DIERBRANCHIATA	2	0.265	1	0.196
GONIADA LITTORAE	2	0.265	1	0.196
GYPTIS VITIATA	7	0.927	0	0.0
HAPLISCILLICHLIS FOLIOSUS	7	0.927	0	0.0
HAPLISCILLICHLIS FRAGILIS	5	0.662	2	0.391
HAPLISCILLOPS ROBUSTUS	0	0.0	1	0.196
LUMBRINERIS CALZENSIS	342	45.298	216	42.270
LUMBRINERIS TETRAURA	4	0.530	1	0.196
MAGELCNA LONGICORNIS	0	0.0	2	0.391
NEOICHAELIS CALIFORNIENSIS	2	0.265	2	0.391
NEANTHES SUCCINEA	0	0.0	1	0.196
NEPHYS BUCERA	2	0.265	0	0.0
NEPHYS PICTA	5	1.192	1	0.196

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/18/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>BRANCHIOSTICMA FLORIDAE</u>	21	2.147	1	0.356
TOTALS	978		281	
NO. SPECIES		77		46
NO. IND. PER M2		3912		1124
S-W INDEX - H*(LN)		2.6227		2.9372
EVENNESS - J		0.6038		0.7672

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NOTOMASTUS HEMIPODUS	1	0.132	1	0.196
ONUPHIS EREMITA OCULATA	11	1.457	6	1.174
ONUPHIS NEBULOSA	2	0.265	2	0.391
ORBINIA RISERI	1	0.132	0	0.0
OBENIA FLSTIFORMIS	1	0.132	0	0.0
PARACNIDES LYRA	1	0.132	0	0.0
PARACNIS FULGENS	6	0.795	1	0.196
PARAFRICNSPIC PINNATA	0	0.0	8	1.566
PHYLLIDICE ARENAE	2	0.265	1	0.196
PRICNSPIC CRISTATA	15	1.987	14	2.740
RULLIERINEREIS MEXICANA	11	1.457	17	3.327
SCOLICELLS ARMIGER	30	3.974	10	1.957
SCOLICELLS RUBEA	3	0.397	0	0.0
SIGAMERA BASSI	1	0.132	0	0.0
SIGAMERA TENTACULATA	0	0.0	1	0.196
SPIC PETTIBONEAE	1	0.132	2	0.391
SPIDOPHONES BOMBYX	0	0.0	7	1.370
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOFAUSTORIUS SP.	2	0.265	0	0.0
AMPELISCA VERRILLI	5	0.662	29	5.675
LISTEHLIA SP.	3	0.397	3	0.587
MONOCULODES SP.	8	1.060	18	3.523
PROTOFAUSTORIUS SP.	6	0.795	0	0.0
PSEUDOFALSTORIUS SP.	18	2.384	0	0.0
PSEUDOPLATYSCHNOPUS SP.	65	8.609	66	12.916
SYNCELIDIUM SP.	0	0.0	1	0.196
ANOMURA				
ALBINEA PARETI	0	0.0	6	1.174
BRACHYURA				
OVALIEES CCELLATUS	3	0.397	1	0.196
PINNIXIA SAYANA	0	0.0	1	0.196
CALLINANASSIDAE				
CALLINANASSA JAMAICENSE	1	0.132	0	0.0
CARIDEA				
LEPTOCHELA SERRATORBITA	0	0.0	1	0.196
PROCESSA HEMPHILLI	2	0.265	2	0.391
CUMACEA				
CYCLAPSIS SP.	2	0.265	1	0.196
CYCLAPSIS VARIANS	2	0.265	0	0.0
MYSTICACEA				
UNIDENTIFIED SP.	1	0.132	2	0.391
OSTRACCA				
UNIDENTIFIED SP.	1	0.132	2	0.391
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
ASTROPECTEN AFICULATUS	2	0.265	2	0.391
ECHINOIDEA (SAND DOLLARS; URCHINS)				
MELLITA QUINQUESPERFORATA	1	0.132	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
LEPTISYNAPTA SP.	1	0.132	2	0.391
OPHIURICEA (BRITTLE STARS)				
OPHIOPHRAGMUS MURDEMANI	0	0.0	1	0.196
CEPHALOCORDATA (LANCELETS)				
BRANCHIOSTOMA FLORIDAE	8	1.060	5	0.978

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	755		511	
NO. SPECIES		67		55
NO. IND. PER M2		3020		2044
S-H INDEX - $H'$ (LN)		2.6057		2.4953
EVENNESS - J		0.6197		0.6227

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
12/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	29	3.766	15	1.695
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	26	3.377	2	0.226
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	3	0.390	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>NASSARIUS ACUTUS</u>	1	0.130	0	0.0
<u>POLINICES DUPLICATUS</u>	2	0.260	2	0.226
PELECYPODA (CLAMS)				
<u>ERVILIA CONCENTRICA</u>	1	0.130	0	0.0
<u>LUCINA MULTILINEATA</u>	12	1.558	6	0.678
<u>PERIELCMA MARGARITACEUM</u>	4	0.519	0	0.0
<u>SEMELE FRIGIDA</u>	2	0.260	0	0.0
<u>STRIGILLA MIRABILIS</u>	2	0.260	6	0.678
<u>TELLINA TEXANA</u>	0	0.0	5	0.565
<u>TELLINA VESICOLOR</u>	13	1.688	6	0.678
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	45	5.844	9	1.017
POLYCHAETA				
<u>AGLAPHAMUS VERRILLI</u>	1	0.130	0	0.0
<u>AMPHARETE ACUTIFRONS</u>	1	0.130	0	0.0
<u>APPELICATSEIC PYGMAEA</u>	3	0.390	3	0.339
<u>ARICIDEA CERUTI</u>	11	1.429	1	0.113
<u>ARICIDEA FRAGILIS</u>	1	0.130	1	0.113
<u>ARMANDIA AGILIS</u>	2	0.260	6	0.678
<u>ARMANDIA MACULATA</u>	5	0.649	9	1.017
<u>AXIOTELLA MUCOSA</u>	1	0.130	0	0.0
<u>ERANIA CLAVATA</u>	2	0.260	1	0.113
<u>ERANIA WELFLEETENSIS</u>	2	0.260	0	0.0
<u>CABIRA INCERTA</u>	0	0.0	1	0.113
<u>CERATONEREIS IRRITABILIS</u>	2	0.260	6	0.678
<u>CHAETIZONE SETOSA</u>	0	0.0	1	0.113
<u>CHONE SP.</u>	8	1.039	0	0.0
<u>CISTENICES GOULDII</u>	2	0.260	0	0.0
<u>ECKE LACTEA</u>	5	0.649	4	0.452
<u>GLYCERA AMERICANA</u>	3	0.390	8	0.904
<u>GLYCERA DIBRANCHIATA</u>	1	0.130	0	0.0
<u>GONIACA LITTOREA</u>	7	0.909	1	0.113
<u>GYPSIS VITTATA</u>	6	0.779	0	0.0
<u>HAPLOSCOLOPLOS FOLIOLIS</u>	8	1.039	11	1.243
<u>HAPLOSCOLOPLOS FRAGILIS</u>	10	1.299	3	0.339
<u>HAPLOSCOLOPLOS RODULIS</u>	1	0.130	0	0.0
<u>ISOCHA PULCHELLA</u>	1	0.130	0	0.0
<u>LUGDUNINERIS CRUZENSIS</u>	240	31.169	429	48.475
<u>LUGDUNINERIS TENUIS</u>	21	2.727	5	0.565
<u>MACELONA LONGICORNIS</u>	0	0.0	2	0.226
<u>MACELONA PEYRONIAE</u>	1	0.130	0	0.0
<u>MACELONA RIGIDA</u>	0	0.0	1	0.113
<u>MACELONA CALIFORNIENSIS</u>	2	0.260	0	0.0
<u>MACELONA CUBANA</u>	1	0.130	0	0.0
<u>MACELONA ACUTICORNIS</u>	0	0.0	1	0.113
<u>MACELONA PULCHRA</u>	1	0.130	1	0.113
<u>MACELONA PULCHRA</u>	0	0.0	2	0.226

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
12/1/76  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOMASTUS HEMIPODUS</u>	1	0.130	4	0.452
<u>NOTOMASTUS LATERICEUS</u>	2	0.260	0	0.0
<u>ONUPHIS FREMITA OCULATA</u>	28	3.636	15	1.695
<u>ONUPHIS NEBULOSA</u>	4	0.519	0	0.0
<u>OWENIA FUSIFORMIS</u>	1	0.130	0	0.0
<u>PARACNIDES LYRA</u>	4	0.519	0	0.0
<u>PARACNIS FLIGENS</u>	1	0.130	3	0.339
<u>PARAFELICNSPIO PINNATA</u>	0	0.0	3	0.339
<u>PHYLLIDICE ARENAE</u>	0	0.0	4	0.452
<u>PRICNCSPIC CRISTATA</u>	41	5.325	55	6.215
<u>RULLIERINEREIS MEXICANA</u>	12	1.558	9	1.017
<u>SCOLICELIS ARMIGER</u>	34	4.416	44	4.972
<u>SCOLCPOS RUERA</u>	1	0.130	0	0.0
<u>SIGAMBRA TENTACULATA</u>	1	0.130	0	0.0
<u>SPIO PETTIBONEAE</u>	1	0.130	1	0.113
<u>SPIOPLANES BOMBYX</u>	4	0.519	5	0.565
<b>ARTHROPODA (CRUSTACEANS)</b>				
<b>AMPHIPCCIA</b>				
<u>ACANTHCHAUSTORIUS SP.</u>	1	0.130	3	0.339
<u>AMPELISCA VERRILLI</u>	10	1.299	23	2.599
<u>HYPERIA SP.</u>	14	1.818	0	0.0
<u>LISTRIELLA SP.</u>	4	0.519	4	0.452
<u>MONCCULDES SP.</u>	4	0.519	7	0.791
<u>PROTOKAUSTORIUS SP.</u>	0	0.0	9	1.017
<u>PSEUDOKAUSTORIUS SP.</u>	2	0.260	8	0.904
<u>PSEUDOPLATYISCHNORUS SP.</u>	79	10.260	117	13.220
<u>SYNCHERIDIUM SP.</u>	1	0.130	1	0.113
<u>TIRON SP.</u>	1	0.130	0	0.0
<b>ANCHURA</b>				
<u>ALBUNEA PARETI</u>	4	0.519	6	0.678
<u>PAGURUS LONGICARPUS</u>	2	0.260	0	0.0
<b>EFACHYURA</b>				
<u>GVALIFES CCELLATUS</u>	2	0.260	1	0.113
<b>CALLIANASSIDAE</b>				
<u>CALLIANASSA JAMAICENSE</u>	1	0.130	0	0.0
<b>CARIDEA</b>				
<u>HIPPOLYTE PLEURACANTHA</u>	1	0.130	0	0.0
<u>LEPTICELLA SERRATORBITA</u>	0	0.0	2	0.226
<b>CUMACEA</b>				
<u>CYCLAFSIS SP.</u>	1	0.130	1	0.113
<u>CYCLAFSIS VARIANS</u>	2	0.260	0	0.0
<b>OSTRACCA</b>				
<u>UNIDENTIFIED SP.</u>	3	0.390	2	0.226
<b>PENAEIDA</b>				
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.130	1	0.113
<b>ECHINODERMATA</b>				
<b>HOLOTHUROIDEA (SEA CUCUMBERS)</b>				
<u>LEPTCSYNAPIA SP.</u>	3	0.390	0	0.0
<b>CEPHALOCHERDATA (LANCELETS)</b>				
<u>BRANCHIOSTOMA FLORIDAE</u>	10	1.299	9	1.017
<b>TOTALS</b>				
NO. SPECIES	770	74	885	54
NO. IND. PER M2		3080		3540
S-W INDEX - H'(LN)		2.9874		2.2595
EVENNESS - J		0.6941		0.5664

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
1/5/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.696	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	9	2.088	13	2.372
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.856	1	0.182
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	1	0.232	0	0.0
POLINICES DUPLICATUS	0	0.0	1	0.182
PELECYPODA (CLAMS)				
LUCINA MULTILINEATA	1	0.232	3	0.547
PERIPLOMA MARGARITACEUM	0	0.0	3	0.547
STRIGILLA MIRABILIS	5	1.160	0	0.0
TELLINA TEXANA	1	0.232	0	0.0
TELLINA VERSICOLOR	18	4.176	1	0.182
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	57	13.225	2	0.365
POLYCHAETA				
AGLAOPHANTUS VERRILLI	1	0.232	0	0.0
APOPRIONOSPION PYGMAEA	0	0.0	1	0.182
ARICIDEA CERRUTI	2	0.464	0	0.0
ARMANDIA AGILIS	1	0.232	3	0.547
ARMANDIA MACULATA	3	0.696	0	0.0
BRANIA WELFLEETENSIS	1	0.232	0	0.0
CERATONEURIS IRRITABILIS	0	0.0	6	1.095
CHOCNE SP.	6	1.392	3	0.547
CISTENIODES GOULDII	0	0.0	1	0.182
DICPATRA CUPREA	1	0.232	0	0.0
GLYCERA AMERICANA	8	1.856	4	0.730
GONIADA LITIGEA	1	0.232	0	0.0
GYPTIS VITTATA	2	0.464	0	0.0
HAPLISCOCLOPUS FOLIOSUS	2	0.464	0	0.0
HAPLISCOCLOPUS FRAGILIS	0	0.0	1	0.182
LUMBERNEIS ACUTUS	4	0.928	0	0.0
LUMBERNEIS CRUZENSIS	15	3.480	343	62.591
LUMBERNEIS TENUIS	2	0.464	0	0.0
LUMBERNEIS TETRAURA	4	0.928	0	0.0
MACRICLYMENE ZONALIS	1	0.232	1	0.182
PAGELCNA LONGICORNIS	1	0.232	0	0.0
PAGELCNA SP.	2	0.464	0	0.0
NEPHTYS BUCERA	1	0.232	0	0.0
NEPHTYS PICTA	4	0.928	0	0.0
NOTOMASTUS HEMIPODUS	2	0.464	0	0.0
NOTOMASTUS LATERICEUS	0	0.0	1	0.182
CNUPTIS FREMIATA OCOLATA	0	0.0	3	0.547
PARACNICES LYRA	0	0.0	1	0.182
PARACNICES FULGENS	1	0.232	0	0.0
PARAPRIONOSPION PINNAIA	0	0.0	3	0.547
PHYLLODOCE ARENAE	0	0.0	3	0.547
PRIONOSPION CRISTATA	16	3.712	35	6.387
RULLIERINEREIS MEXICANA	13	3.016	2	0.365
SCOLELEPIS SQUAMATA	2	0.464	0	0.0
SCOLELEPIS TEXANA	3	0.696	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
1/5/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>SCOLOPLOS ARMIGER</u>	35	8.121	23	4.197
<u>SIGAMBRA BASSI</u>	1	0.232	0	0.0
<u>SPIO PETTIBONEAE</u>	1	0.232	0	0.0
<u>SPIOPHANES BOMBYX</u>	6	1.392	11	2.007
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	3	0.696	0	0.0
<u>AMPELISCA VERRILLI</u>	1	0.232	10	1.825
<u>ERICHTHONIUS SP.</u>	2	0.464	0	0.0
<u>LISTRIELLA SP.</u>	2	0.464	1	0.182
<u>MONOCULODES SP.</u>	1	0.232	1	0.182
<u>PROTOKHALSTORIUS SP.</u>	15	3.480	4	0.730
<u>PSEUDOKHALSTORIUS SP.</u>	40	9.281	4	0.730
<u>PSEUDOPLATYISCHNOPUS SP.</u>	55	22.042	45	8.212
<u>SYNCHELIDIUM SP.</u>	0	0.0	3	0.547
ANOMURA				
<u>PAGURUS LONGICARPUS</u>	2	0.464	0	0.0
BRACHYURA				
<u>OVALIPES OCELLATUS</u>	2	0.464	2	0.365
<u>PINNIXIA SAYANA</u>	2	0.464	1	0.182
CARIDEA				
<u>HIPPILYTE FLEURACANTHA</u>	1	0.232	0	0.0
CUMACEA				
<u>CYCLAPSIS VARIANS</u>	1	0.232	0	0.0
ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA QUINQUESPERFORATA</u>	1	0.232	0	0.0
HOLOTHURIOIDEA (SEA CUCUMBERS)				
<u>LEPTISYNAPIA SP.</u>	2	0.464	3	0.547
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.232	0	0.0
CEPHALOCORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	15	3.480	5	0.912
TOTALS				
NO. SPECIES	431	56	548	36
NO. IND. PER M2		1724		2192
S-W INDEX - H <sup>2</sup> (LN)		3.0102		1.7037
EVENNESS - J		0.7478		0.4754



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
2/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>NEMERTINEA (RIBBON WORMS)</b>				
UNIDENTIFIED SP.	16	4.222	16	2.893
<b>NEMATODA (ROUNDWORMS)</b>				
UNIDENTIFIED SP.	18	4.749	0	0.0
<b>MOLLUSCA (SHELLFISH)</b>				
<b>GASTROPODA (SNAILS)</b>				
ANACIS FLORIDANA	1	0.264	0	0.0
NATICA PUSILLA	4	1.055	1	0.181
OLIVA SAYANA	0	0.0	1	0.181
POLINICES DUPLICATUS	1	0.264	0	0.0
TURBNILLA CONRADI	1	0.264	0	0.0
<b>PELECYPODA (CLAMS)</b>				
LUCINA MULTILINEATA	6	1.583	15	2.712
MACROCALLISTA NIMBOSA	2	0.528	0	0.0
PERIPLOMA MARGARITACEUM	1	0.264	0	0.0
PITAR SIMPSONI	1	0.264	0	0.0
STRIGILLA MIRABILIS	6	1.583	0	0.0
TELLINA TEXANA	2	0.528	1	0.181
TELLINA VESICOLOR	7	1.847	3	0.542
<b>ANNELIDA (SEGMENTED WORMS)</b>				
<b>OLIGOCHAETA</b>				
UNIDENTIFIED SP.	35	9.235	4	0.723
<b>POLYCHAETA</b>				
AGLAPTAMUS VERRILLI	0	0.0	1	0.181
APOEIGNOSPION PYGMAEA	1	0.264	0	0.0
ARICICEA CERRUTI	0	0.0	1	0.181
ARICICEA FRAGILIS	0	0.0	2	0.362
ARMANCIA AGILIS	1	0.264	1	0.181
ARMANDIA MACULATA	6	1.583	0	0.0
BRANIA CLAVATA	3	0.792	0	0.0
BRANIA WELFLEETENSIS	1	0.264	0	0.0
CHAETOZONE SETOSA	0	0.0	2	0.362
CHONE SP.	4	1.055	4	0.723
DIOPATRA CUPREA	0	0.0	2	0.362
EYDNE LACTEA	0	0.0	1	0.181
GLYCERA AMERICANA	1	0.264	0	0.0
GLYCERA DIBRANCHIATA	0	0.0	2	0.362
GONIADA LITTOREA	1	0.264	2	0.362
GYPTIS VITIATA	1	0.264	0	0.0
HAPLCSOLOPLOS FOLIOLUS	1	0.264	0	0.0
HAPLCSOLOPLOS FRAGILIS	2	0.528	1	0.181
LUMBRINERIS CRUZENSIS	6	1.583	325	58.770
LUMBRINERIS TETRAURA	5	1.319	1	0.181
MAGELONA LONGICORNIS	0	0.0	4	0.723
MAGELONA SP.	1	0.264	0	0.0
MEDICASTYUS CALIFORNIENSIS	0	0.0	2	0.362
NEANTHES SP.	0	0.0	2	0.362
NEPHIYS BUCERA	1	0.264	0	0.0
NEPHIYS PICIA	3	0.792	3	0.542
NOTOMASTYS HEMIPODUS	1	0.264	0	0.0
OLUPHIS EREMITA OCULATA	2	0.528	32	5.787
PARACNIDES LYRA	1	0.264	0	0.0
PARACNIDES FULGENS	1	0.264	0	0.0
POLYDORA TETRAERANCHIA	2	0.528	1	0.181
PRICASPIC CRISTATA	15	3.958	31	5.606
SCILLERINERIS MEXICANA	7	1.847	7	1.266
SCOLELEPIS SQUAMATA	5	1.319	2	0.362

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
2/2/77  
(CONTINUED)

SPECIES	NO. CF IND. (C.)		NO. CF INC. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>SCOLELEPIS TEXANA</u>	5	2.375	4	0.723
<u>SCOLOPLOS ARMIGER</u>	28	7.388	2	0.362
<u>SIGAMBRA TENTACULATA</u>	0	0.0	1	0.181
<u>SPIO PETTIBONEAE</u>	1	0.264	0	0.0
<u>SPIOPHANES BCMBYX</u>	11	2.902	26	4.702
<b>ARTHROPOCA (CRUSTACEANS)</b>				
<u>AMPHIPCCA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	16	4.222	2	0.362
<u>AMPELISCA VERRILLI</u>	2	0.528	0	0.0
<u>LITORELLA SP.</u>	3	0.792	0	0.0
<u>MONACULODES SP.</u>	1	0.264	0	0.0
<u>PROCTHAUSTORIUS SP.</u>	34	8.971	2	0.362
<u>PSEUDOPHAUSTORIUS SP.</u>	0	0.0	1	0.181
<u>PSEUDOPLATYSCHEPUS SP.</u>	88	23.219	35	6.329
<u>SYNCALIDIDUM SP.</u>	2	0.528	0	0.0
<u>ANOMURA</u>				
<u>ALBUEA PARELLI</u>	0	0.0	4	0.723
<u>ERACHYURA</u>				
<u>CYALIFES CELLATUS</u>	0	0.0	1	0.181
<u>CUMACEA</u>				
<u>CYCLAPSIS VARIANS</u>	0	0.0	1	0.181
<u>OSTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	3	0.792	1	0.181
<u>PENAEIDEA</u>				
<u>SICYONIA BREVIROSTRIS</u>	0	0.0	1	0.181
<b>ECHINODERMATA</b>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.264	0	0.0
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MOIRA ATEOPS</u>	1	0.264	0	0.0
<u>HOLOTHURIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOSYNAPTIA SP.</u>	0	0.0	1	0.181
<b>CEPHALOCORDATA (LANCELETS)</b>				
<u>BRANCHIOSTOMA FLORIDAE</u>	6	1.583	1	0.181
<b>TOTALS</b>	<b>379</b>		<b>553</b>	
NO. SPECIES	53		44	
NO. INC. PER M2	1516		2212	
S-W INDEX - H' (LN)	3.0609		1.8770	
EVENNESS - J	0.7710		0.4960	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
3/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	17	2.881	17	1.822
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	6	1.017	10	1.072
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	1	0.169	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANALICULATA	1	0.169	0	0.0
ANACTIS FLORICANA	1	0.169	0	0.0
NATICA PUSILLA	3	0.508	6	0.643
CLIVA SAYANA	1	0.169	0	0.0
POLYCHITES DUPLICATUS	4	0.678	1	0.107
TURBENILLA CONRADI	4	0.678	2	0.214
PELECYPOCA (CLAMS)				
LUCINA MULTILINEATA	8	1.356	6	0.643
PERITELCA MARGARITACEUM	3	0.508	1	0.107
STRIGILLA MIRABILIS	0	0.0	3	0.322
TELLINA ACQUISTRATA	1	0.169	0	0.0
TELLINA VERSICOLOR	10	1.695	9	0.965
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	55	10.000	5	0.536
POLYCHAETA				
AGLAPHAMUS VERRILLI	2	0.339	1	0.107
AMPHARETE ACUTIGENS	0	0.0	1	0.107
APOEIONOSPIO PYGMAEA	0	0.0	1	0.107
ARICIDEA CERRETI	2	0.339	5	0.536
ARICIDEA FRAGILIS	1	0.169	0	0.0
ARICIDEA PHILBINAE	4	0.678	0	0.0
ARICIDEA SLEICHA	1	0.169	0	0.0
ARICIDEA TAYLORI	1	0.169	0	0.0
ARMANDIA AGILIS	4	0.678	10	1.072
BRANIA CLAVATA	0	0.0	5	0.536
BRANIA WELFLEETENSIS	0	0.0	2	0.214
CAPITELLA CAPITATA	0	0.0	1	0.107
CERATONEURIS IRRITABILIS	0	0.0	2	0.214
CERATONEURIS MIRABILIS	0	0.0	3	0.322
CHCNE SP.	1	0.169	0	0.0
EYELINE LACIEA	1	0.169	0	0.0
GLYCERA AMERICANA	0	0.0	3	0.322
GLYCERA DIBRANCHIATA	3	0.508	1	0.107
GONIATA LITTOREA	2	0.339	0	0.0
GYPTIS VITTATA	3	0.508	2	0.214
LAPLOSCHOLOPLOS FOLIOSUS	2	0.339	0	0.0
LAPLOSCHOLOPLOS FRAGILIS	5	0.847	0	0.0
LAPLOSCHOLOPLOS ROBUSTUS	0	0.0	1	0.107
LOIMIA VIRIDIS	1	0.169	0	0.0
LUMBERINERIS CRUZENSIS	127	21.525	271	29.046
LUMBERINERIS TETRAURA	29	4.915	3	0.322
MACHOCLYMENE ZONALIS	1	0.169	2	0.214
MEDICMASTUS CALIFORNIENSIS	5	0.847	0	0.0
MICROPETHALMUS ABERRANS	0	0.0	1	0.107
MINUSPIO CIRRIFERA	1	0.169	0	0.0
NEPHYS BUCERA	0	0.0	2	0.214
NEPHYS PICTA	25	4.237	28	3.001

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
3/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTICOSTIUS HEMIPODUS</u>	3	0.508	2	0.214
<u>ONUPHIS EREMITA OCULATA</u>	11	1.864	26	2.787
<u>CRIBRIA RISEI</u>	0	0.0	1	0.107
<u>PARACNIDES LYRA</u>	4	0.678	1	0.107
<u>PARACNIS FULGENS</u>	1	0.169	4	0.429
<u>PHYLLODOCE ARENAE</u>	1	0.169	1	0.107
<u>POLYCORA SOCIALIS</u>	0	0.0	1	0.107
<u>PRIONOSPID CRISTATA</u>	29	4.915	146	15.648
<u>PSEUDOEURYTHOE AMBIGUA</u>	0	0.0	1	0.107
<u>RULLITERINEREIS MEXICANA</u>	12	2.034	3	0.322
<u>SCOLELEPIS SQUAMATA</u>	5	0.847	6	0.643
<u>SCOLELEPIS TEXANA</u>	0	0.0	9	0.965
<u>SCOLOPLOS ARMIGER</u>	43	7.288	48	5.145
<u>SCOLOPLOS RUBRA</u>	2	0.339	0	0.0
<u>STIGAMBRA TENTACULATA</u>	0	0.0	3	0.322
<u>SPID PETTIBONEAE</u>	0	0.0	4	0.429
<u>SPIOCHAETOPTERUS OCULATUS</u>	1	0.169	0	0.0
<u>SPIOPHANES BOMBYX</u>	57	9.661	112	12.004
<u>SIPHACULICA (PEANUT WORMS)</u>				
<u>ASPIDOSIPHON SP.</u>	0	0.0	1	0.107
<u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	0	0.0	7	0.750
<u>AMPELISCA VERRILLI</u>	3	0.508	3	0.322
<u>LISTRIELLA SP.</u>	2	0.339	4	0.429
<u>MONOCLODUS SP.</u>	1	0.169	4	0.429
<u>PROTOMALSTORIUS SP.</u>	0	0.0	12	1.286
<u>PSEUDOMALSTORIUS SP.</u>	2	0.339	0	0.0
<u>PSEUDOPLATYSCHEIDOPUS SP.</u>	42	7.119	104	11.147
<u>SYNCELIDION SP.</u>	1	0.169	0	0.0
<u>TIRCA BISCCELLATUS</u>	0	0.0	1	0.107
<u>ANCURA</u>				
<u>ALBINEA PARELLI</u>	1	0.169	6	0.643
<u>EUCERAMUS PRAELONGUS</u>	1	0.169	0	0.0
<u>PAGURUS LONGICARPUS</u>	1	0.169	1	0.107
<u>BRACHYURA</u>				
<u>OVALIPES OCELLATUS</u>	2	0.339	5	0.536
<u>PINNIPEDIA SAYANA</u>	0	0.0	1	0.107
<u>CARIDEA</u>				
<u>HIPPELYTE PLEURACANTHA</u>	1	0.169	0	0.0
<u>CUMACEA</u>				
<u>CYCLAPSIS SP.</u>	1	0.169	0	0.0
<u>CYCLAPSIS VARIANS</u>	1	0.169	7	0.750
<u>OSTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	8	1.356	2	0.214
<u>ECHINODERMATA</u>				
<u>ASTEROCIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	2	0.339	0	0.0
<u>HELOTHURIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOSYNAPTIA SP.</u>	9	1.525	0	0.0
<u>OPHIURIDEA (BRITTLE STARS)</u>				
<u>OPHIOPHRAGMUS WARDENANI</u>	0	0.0	1	0.107
<u>CEPHALOCORDATA (LANCELETS)</u>				
<u>BRANCHIOSIGMA FLORIDAE</u>	3	0.508	1	0.107

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
3/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	590		933	
NO. SPECIES		64		62
NO. IND. PER M2		2360		3732
S-B INDEX - H' (LN)		3.0592		2.6117
EVENNESS - J		0.7356		0.6328

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
4/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.304	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	11	1.672	17	2.163
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	27	4.103	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.127
TEREBERA DISLOCATA	1	0.152	1	0.127
TURBOCILLA CONRADI	1	0.152	0	0.0
PELECYPODA (CLAMS)				
ANATINA ANATINA	1	0.152	0	0.0
LUCINA MULTILINEATA	7	1.064	3	0.382
PERILECMA MARGARITACEUM	3	0.456	0	0.0
SOLENYA SP.	0	0.0	5	0.636
STRIGILLA MIRABILIS	2	0.304	0	0.0
TELLINA VERTICOLOR	11	1.672	13	1.654
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	31	4.711	10	1.272
POLYCHAETA				
AGLAPHAMUS VERRILLI	1	0.152	0	0.0
APOBRIONOSPIO PYGMAEA	1	0.152	2	0.254
ARICIDEA FAUVELI	3	0.456	5	0.636
ARMANDIA AGILIS	5	0.760	5	0.636
ARMANDIA MACULATA	2	0.304	1	0.127
ERANIA WELFLEETENSIS	5	0.760	0	0.0
CERATOCEREIS MIRABILIS	0	0.0	2	0.254
CHONE SP.	1	0.152	2	0.254
CIRRATULIDAE UNIDENTIFIED SP.	0	0.0	1	0.127
DIOPATRA CUPREA	0	0.0	1	0.127
DISPIO UNCINATA	20	3.040	4	0.509
ETEONE LACTEA	1	0.152	2	0.254
GLYCERA AMERICANA	6	0.912	3	0.382
GLYCERA DIDRANCHIATA	1	0.152	1	0.127
GONIACA LITTOREA	1	0.152	0	0.0
GYDITE BREVIHALPA	5	0.760	0	0.0
HAPLISCLOPLOS FRAGILIS	0	0.0	1	0.127
LUMBRINERIS CRUZENSIS	32	4.863	126	23.664
LUMBRINERIS ERECTA	0	0.0	1	0.127
LUMBRINERIS TETRAURA	10	1.520	1	0.127
MAGELCNA LONGICORNIS	1	0.152	3	0.382
MAGELCNA SP.	3	0.456	1	0.127
MEDICMASTILS CALIFORNENSIS	1	0.152	3	0.382
NEPHIYS BUCERA	0	0.0	1	0.127
NEPHIYS PICTA	75	11.398	37	4.707
NOTOMASTILS HEMIPODUS	0	0.0	2	0.254
ONUPHIS EREMITA OCULATA	0	0.0	23	2.926
ONUPHIS PALLICA	0	0.0	1	0.127
PARACNIDES LYRA	1	0.152	0	0.0
PARACNIS FULGENS	8	1.216	1	0.127
PARAFICINSPIC PINNATA	3	0.456	4	0.509
PHYLLIDICE ARENAE	0	0.0	6	0.763
POLYCIREUS EXIMIUS	0	0.0	1	0.127

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
4/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>POLYDORA SOCIALIS</u>	1	0.152	1	0.127
<u>POLYDORA TETRABRANCHIA</u>	3	0.456	0	0.0
<u>PRIONOSPIO CRISTATA</u>	26	3.951	51	6.489
<u>PSEUDOCERYTHOE AMBIGUA</u>	1	0.152	0	0.0
<u>RULLIERINEREIS MEXICANA</u>	6	0.912	2	0.254
<u>SCOLELEPIS TEXANA</u>	39	5.927	24	3.053
<u>SCOLCOPLOS ARMIGER</u>	24	3.647	25	3.181
<u>SCOLICELUS RUERA</u>	7	1.064	0	0.0
<u>SIGAMBRA BASSI</u>	4	0.608	1	0.127
<u>SIGAMBRA TENTACULATA</u>	0	0.0	2	0.254
<u>SPIC PETTIBONEAE</u>	0	0.0	1	0.127
<u>SPICIFRANES BOMBYX</u>	102	15.502	316	40.204
SIPUNCULIDA (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	0	0.0	1	0.127
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHCHAUSTORIUS SP.</u>	14	2.128	0	0.0
<u>AMPELISCA VERRILLI</u>	0	0.0	1	0.127
<u>ERICHTHONIUS SP.</u>	13	1.976	0	0.0
<u>MONACULODES SP.</u>	1	0.152	1	0.127
<u>PROTODAUSTORIUS SP.</u>	28	4.255	0	0.0
<u>PSEUDOPALATYISCHNOPUS SP.</u>	89	13.526	4	0.509
<u>UNIDENTIFIED SP.</u>	3	0.456	0	0.0
ANOMURA				
<u>ALBONEA PARETI</u>	2	0.304	2	0.254
CARIDEA				
<u>HIPPELYTIE PLEURACANTHA</u>	1	0.152	0	0.0
CUMACEA				
<u>CYCLAPSIUS SP.</u>	1	0.152	0	0.0
<u>CYCLAPSIUS VARIANS</u>	4	0.608	1	0.127
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	1	0.152	1	0.127
TANAIDACEA				
<u>UNIDENTIFIED SP.</u>	1	0.152	0	0.0
ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MOIRA ATROPS</u>	1	0.152	0	0.0
CEPHALOCHOORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	3	0.456	1	0.127
TOTALS				
NO. SPECIES	658	57	786	52
NO. IND. PER M2		2632		3144
S-B INDEX - H'(LN)		3.0944		2.1706
EVENNESS - J		0.7654		0.5493

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
5/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.242
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	15	2.333	16	3.865
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.244	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.242
TURBENILLA CONRADI	2	0.311	0	0.0
PELECYPODA (CLAMS)				
LEPTIA SP.	1	0.156	2	1.932
LUCINA MULTILINEATA	4	0.622	2	0.483
SOLEMYA VELUM	1	0.156	0	0.0
STRIGILLA MIRABILIS	0	0.0	1	0.242
TELLINA TEXANA	0	0.0	1	0.242
TELLINA VERSICOLOR	9	1.400	0	0.0
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHAETA				
UNIDENTIFIED SP.	29	4.510	7	1.691
POLYCHAETA				
AMPHARETE ACUTIERCENS	0	0.0	1	0.242
APODEIONOSPIO PYGMAEA	0	0.0	2	0.483
ARICIDEA FAUVELI	4	0.622	5	1.208
ARICIDEA FRAGILIS	5	0.778	4	0.966
ARICIDEA PHILBINAE	0	0.0	1	0.242
ARMANDIA AGILIS	1	0.156	0	0.0
BRANIA WELFLEETENSIS	2	0.311	2	0.483
CAPITELLA CAPITATA	0	0.0	3	0.725
CERATINERIS MIRABILIS	2	0.311	5	1.208
CHCNE SP.	2	0.311	1	0.242
DISPAT UNGINATA	4	0.622	4	0.966
ETECNE LACTEA	0	0.0	2	0.483
GLYCERA AMERICANA	2	0.311	3	0.725
GYPTIS BREVIPALPA	3	0.467	0	0.0
HAPLISCLOPLCS FOLIOSUS	13	2.022	7	1.691
HAPLISCLOPLCS FRAGILIS	4	0.622	0	0.0
LOPIA MEDUSA	1	0.156	0	0.0
LUMBERINERIS CRUZENSIS	81	12.597	62	14.976
LUMBERINERIS TETRAURA	15	2.333	3	0.725
MAGELLANA LONGICOENIS	1	0.156	2	0.483
MAGELLANA SP.	5	0.778	3	0.725
MEDICINASTUS CALIFORNIENSIS	3	0.467	2	0.483
NEPHYS BUCERA	1	0.156	1	0.242
NEPHYS PICTA	90	13.997	58	14.010
NOTOMASTUS HEMIPODUS	1	0.156	2	0.483
ONUPPIS EREMITA OCULATA	0	0.0	5	1.208
OPHELIA SP.	2	0.311	0	0.0
PARACNICES LYRA	5	0.778	1	0.242
PARACNICES FULGENS	1	0.156	0	0.0
PARAPRIONOSPIO PINNATA	3	0.467	50	12.077
PHYLLODOCE ARENAE	3	1.244	9	2.174
PODARKE OBSCURA	0	0.0	1	0.242
POECILOCHAETUS JOHNSONI	0	0.0	1	0.242
PRIONOSPIO CRISTATA	14	2.177	10	2.415



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
5/2/77  
(CONTINUED)

SPECIES	NO. OF INC. (C.)		NO. OF INC. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>BULLI ERINEREIS MEXICANA</u>	4	0.622	2	0.483
<u>SCOLELEPIS TEXANA</u>	2	0.311	1	0.242
<u>SCOLECELOS ARMIGER</u>	0	0.0	3	0.725
<u>SCOLECELOS RUBRA</u>	0	0.0	14	3.382
<u>SIGAMERA BASSI</u>	1	0.156	0	0.0
<u>SIGAMERA TENTACULATA</u>	1	0.156	0	0.0
<u>SPIO PETTIBONEAE</u>	11	1.711	0	0.0
<u>SPIOPANES BOMBYX</u>	157	24.417	89	21.498
<u>STREBLAIS BOA</u>	0	0.0	1	0.242
<b>ARTHROPODA (CRUSTACEANS)</b>				
<b>AMPHIPODA</b>				
<u>AMPELISCA ABDITA</u>	0	0.0	1	0.242
<u>AMPELISCA VERRILLI</u>	9	1.400	0	0.0
<u>LISTRIELLA SP.</u>	3	0.467	1	0.242
<u>MICROPOTOPUS SP.</u>	0	0.0	1	0.242
<u>PROCEAUSTORIUS SP.</u>	0	0.0	2	0.483
<u>PSAUDROAUSTORIUS SP.</u>	1	0.156	0	0.0
<u>PSAUDROPLATYSCHNOPUS SP.</u>	92	14.308	0	0.0
<u>SYNGEIDIDUM SP.</u>	4	0.622	2	0.483
<b>BRACHYURA</b>				
<u>MEICECHAPIS CALCARATA</u>	0	0.0	1	0.242
<u>PILIDIA LUNZI</u>	1	0.156	0	0.0
<u>PILIDIA SAYANA</u>	1	0.156	0	0.0
<b>CANIOLA</b>				
<u>PROCESSA MEMPHILLI</u>	1	0.156	0	0.0
<b>CLAPPEA</b>				
<u>CYCLAPSIS SP.</u>	1	0.156	1	0.242
<u>CYCLAPSIS VARIANS</u>	4	0.622	1	0.242
<b>OSTRACODA</b>				
<u>CAPOCYTHERIDEA SEPTIPUNCTATA</u>	3	0.467	0	0.0
<u>UNIDENTIFIED SP.</u>	1	0.156	1	0.242
<b>ECHINODERMATA</b>				
<b>ASTEROIDEA (STARFISHES)</b>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.156	2	0.483
<b>OPHTHIOIDEA (BRITTLE STARS)</b>				
<u>UNIDENTIFIED SP.</u>	0	0.0	1	0.242
<b>HEMICHORCATA</b>				
<b>ENTEROPNEUSTA (ACORN WORMS)</b>				
<u>UNIDENTIFIED SP.</u>	1	0.156	0	0.0
<b>CEPHALOCHORDATA (LANCELETS)</b>				
<u>BRANCHIOSTOMA FLORIDAE</u>	2	0.311	3	0.725
<b>TOTALS</b>				
NO. SPECIES	643	55	414	54
NO. INC. PER M2		2572		1656
S-B INDEX - H'(LN)		2.7186		2.8260
EVENNESS - J		0.6784		0.7085

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
6/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	15	3.846	26	3.194
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.810	0	0.0
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECIA	0	0.0	2	0.246
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
CYLICNELLA BIDENTATA	2	0.405	1	0.123
DIASICMA VARIUM	0	0.0	1	0.123
PELECYPOCA (CLAMS)				
ANADAEA FLORIDANA	0	0.0	1	0.123
CUMINGIA TELLINOIDES	0	0.0	4	0.491
LEPTA SP.	0	0.0	57	7.002
LUCINA MULTILINEATA	16	3.239	33	4.054
MACTEA SP.	0	0.0	1	0.123
PITAR SIMPSONI	4	0.810	0	0.0
STRIGILLA MIRABILIS	1	0.202	0	0.0
TELLINA TEXANA	0	0.0	2	0.246
TELLINA VERSICOLOR	17	3.441	59	7.248
VENERIDAE UNIDENTIFIED SP.	0	0.0	3	0.369
ANNELIDA (SEGMENTED WORMS)				
CLIGOCCHAETA				
UNIDENTIFIED SP.	23	4.656	24	2.948
PCLYCHAETA				
AMPHARETE ACUTIFRONS	0	0.0	1	0.123
APOPRIONOSPIO PYGMAEA	0	0.0	3	0.369
ARICIDEA FAUVELI	4	0.810	3	0.369
ARICIDEA FRAGILIS	1	0.202	2	0.246
ARMANDIA MACULATA	0	0.0	3	0.369
BRANIA WELFLEETENSIS	1	0.202	0	0.0
CAPITELLA CAPITATA	0	0.0	1	0.123
CERATONEREIS IRRITABILIS	0	0.0	1	0.123
CERATONEREIS MIRABILIS	0	0.0	2	0.246
CHONE SP.	9	1.822	4	0.491
DIOPATRA CUPREA	0	0.0	11	1.351
DISPIO UNCINATA	0	0.0	4	0.491
ETEONE LACTEA	4	0.810	5	0.614
GLYCERA AMERICANA	12	2.429	14	1.720
GLYCERA DIBRANCHIATA	0	0.0	1	0.123
GLYCINE SOLITARIA	0	0.0	3	0.369
GONIADA LITTOREA	3	0.607	0	0.0
GYPTIS VITATA	0	0.0	1	0.123
HAPLOSCOLOPLOS FOLIOSUS	7	1.417	11	1.351
HAPLOSCOLOPLOS FRAGILIS	0	0.0	1	0.123
HARMOTHOE LUNULATA	1	0.202	0	0.0
LUMBERNERIS CRUZENSIS	29	5.870	51	6.265
LUMBERNERIS TETRAURA	9	1.822	6	0.737
MAGELLANA SP.	4	0.810	0	0.0
MEDICASTUS CALIFORNIENSIS	0	0.0	6	0.737
MINUSPIC CIRRIFERA	0	0.0	3	0.369
MYRICHTELE SP.	0	0.0	1	0.123
NEPHYS BUCERA	10	2.024	0	0.0
NEPHYS PICTA	99	20.040	150	18.428
NOTICASTUS HEMIPODUS	2	0.405	0	0.0
CNUPHIS EREMITA OCULATA	27	5.466	26	3.194

AD-A116 340 NATIONAL MARINE FISHERIES SERVICE PANAMA CITY BEACH F--ETC F/G 8/1  
BENTHIC COMMUNITY RESPONSE TO DREDGING BORROW PITS, PANAMA CITY--ETC(U)  
MAR 82 C H SALOMAN, S P NAUGHTON, J L TAYLOR DACW72-81-M-0198  
UNCLASSIFIED CERC-MR-82-3 NL

NATIONAL MARINE FISHERIES SERVICE PANAMA CITY BEACH F--ETC F/G 8/1  
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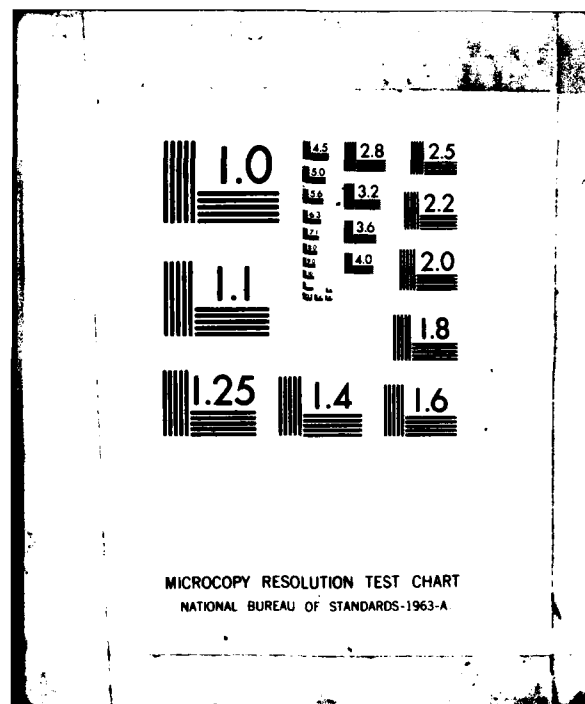
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TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
6/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>ONLPHIS PALLIDA</u>	1	0.202	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.202	0	0.0
<u>PARACNIDES LYRA</u>	6	1.215	6	0.737
<u>PARAPRIONOSPIO PINNATA</u>	0	0.0	27	3.317
<u>PHYLLODOCE ARENAE</u>	2	0.405	5	0.614
<u>PRIONOSPIO CRISTATA</u>	21	4.251	84	10.319
<u>RUILLIERINEREIS MEXICANA</u>	5	1.012	1	0.123
<u>SCOLELEPIS TEXANA</u>	5	1.012	7	0.860
<u>SIGAMBRA BASSI</u>	1	0.202	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	5	1.106
<u>SPIO PETTIBONEAE</u>	8	1.619	0	0.0
<u>SPIOPHANES DOMOYX</u>	18	3.644	50	6.143
<b>ARTHROPOCCA (CRUSTACEANS)</b>				
<b>AMPHIPODA</b>				
<u>ACANTHOHAUSTORIUS SP.</u>	20	4.049	0	0.0
<u>AMPELISCA ABDITA</u>	0	0.0	3	0.369
<u>AMPELISCA VAGORUM</u>	0	0.0	2	0.246
<u>AMPELISCA VERRILLI</u>	14	2.834	3	0.369
<u>ARGISSA SP.</u>	0	0.0	2	0.246
<u>LEPTACTYLUS SP.</u>	0	0.0	1	0.123
<u>LITRIELLA SP.</u>	3	0.607	0	0.0
<u>LYSIANDOPSIS SP.</u>	1	0.202	1	0.123
<u>PROTOHAUSTORIUS SP.</u>	10	2.024	1	0.123
<u>PSEUDHAUSTORIUS SP.</u>	3	0.607	0	0.0
<u>PSEUDOPLATYISCHNOCLES SP.</u>	16	3.239	22	2.703
<u>SYNCELIDIUM SP.</u>	9	1.822	4	0.491
<b>ANOMURA</b>				
<u>ALBONEA PARETII</u>	0	0.0	1	0.123
<b>BRACHYURA</b>				
<u>QUALIFES OCELLATUS</u>	1	0.202	1	0.123
<u>PINNIXIA CYLINDRICA</u>	0	0.0	1	0.123
<u>PINNIXIA RETINENS</u>	2	0.405	1	0.123
<u>PINNIXIA SAYANA</u>	1	0.202	0	0.0
<b>CARIDEA</b>				
<u>PROCESSA HEMPHILLI</u>	2	0.405	5	0.614
<b>CUMACEA</b>				
<u>CYCLAPSIS SP.</u>	3	0.607	1	0.123
<u>CYCLAPSIS VARIANS</u>	9	1.822	10	1.229
<u>OXYURCSTYLIS SMITHI</u>	0	0.0	14	1.720
<b>LEPTOSTRACA</b>				
<u>NEBALIA SP.</u>	1	0.202	1	0.123
<b>MYSIDACEA</b>				
<u>UNIDENTIFIED SP.</u>	1	0.202	0	0.0
<b>OSTRACOCA</b>				
<u>SARSIELLA CHILDI</u>	0	0.0	1	0.123
<b>PENAIODEA</b>				
<u>SICYCNIA BREVIROSTRIS</u>	0	0.0	1	0.123
<b>ECHINODERMATA</b>				
<b>ASTEROIDEA (STARFISHES)</b>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.202	0	0.0
<b>ECHINOIDEA (SAND DOLLARS; URCHINS)</b>				
<u>LYTECHINUS VARIEGATUS</u>	1	0.202	0	0.0
<u>MELLITA QUINQUESPERFORATA</u>	7	1.417	8	0.983
<b>OPHIUROIDEA (BRITTLE STARS)</b>				
<u>UNIDENTIFIED SP.</u>	5	1.012	12	1.474
<b>CEPHALOCORDATA (LANCELETS)</b>				
<u>BRANCHIOSTOMA FLORIDAE</u>	8	1.619	1	0.123

# APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
6/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	494		814	
NO. SPECIES	55		69	
NO. IND. PER M2	1976		3256	
S-B INDEX - $H'$ (LN)	3.3330		3.1585	
EVENNESS - J	0.8317		0.7554	

**TREASURE ISLAND HOTEL (STATION 1) - CONTROL AND EXPERIMENTAL**  
7/5/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>CNIDARIA</b>				
<b>ACTINIDARIA (SEA ANEMONES)</b>				
UNIDENTIFIED SP.	0	0.0	1	0.204
<b>PLATYHELMINTHES</b>				
<b>TURBELLARIA (FLATWORMS)</b>				
UNIDENTIFIED SP.	3	0.368	0	0.0
<b>NEMERTINEA (RIBBON WORMS)</b>				
UNIDENTIFIED SP.	25	3.064	15	3.055
<b>NEMATODA (ROUNDWORMS)</b>				
UNIDENTIFIED SP.	5	0.613	0	0.0
<b>MOLLUSCA (SHELLFISH)</b>				
<b>GASTROPODA (SNAILS)</b>				
<u>ACTEOCINA CANDEI</u>	28	3.431	0	0.0
<u>CYLICINELLA BIDENTATA</u>	0	0.0	1	0.204
<u>NATICA PUSILLA</u>	0	0.0	1	0.204
<u>POLINICES DUPLICATUS</u>	0	0.0	1	0.204
<b>PELECYPODA (CLAMS)</b>				
<u>LAEVICARDIUM MORTONI</u>	1	0.123	0	0.0
<u>LEPICK SP.</u>	10	1.225	0	0.0
<u>LUCINA MULTILINEATA</u>	73	8.946	25	5.092
<u>MACRCCALLISTA MACULATA</u>	2	0.245	0	0.0
<u>PERIPLOMA MARGARITACEUM</u>	3	0.368	0	0.0
<u>TELLINA AEGUSTRATA</u>	3	0.368	2	0.407
<u>TELLINA TEXANA</u>	14	1.716	14	2.851
<u>TELLINA VERSICOLOR</u>	81	9.926	58	11.813
<b>VENERIDAE UNIDENTIFIED SP.</b>	2	0.245	0	0.0
<b>ANNELIDA (SEGMENTED WORMS)</b>				
<b>CLIGOCMAETA</b>				
UNIDENTIFIED SP.	14	1.716	1	0.204
<b>POLYCHAETA</b>				
<u>APOEIONOSPIO PYGMAEA</u>	2	0.245	2	0.407
<u>ARICIDEA CERRUTI</u>	0	0.0	1	0.204
<u>ARICIDEA FAUVELI</u>	3	0.368	6	1.222
<u>ARICIDEA FRAGILIS</u>	4	0.490	2	0.407
<u>ARICIDEA SUECICA</u>	0	0.0	1	0.204
<u>ARMANDIA AGILIS</u>	0	0.0	2	0.407
<u>ARMANDIA MACULATA</u>	0	0.0	1	0.204
<u>CERATONEREIS IRRITABILIS</u>	0	0.0	1	0.204
<u>CHONE SP.</u>	14	1.716	3	0.611
<u>CIRROPHORUS LYRIFORMIS</u>	0	0.0	1	0.204
<u>DISPIO UNCINATA</u>	0	0.0	3	0.611
<u>EYBINE LACIEA</u>	5	0.613	1	0.204
<u>GLYCERA AMERICANA</u>	41	5.025	16	3.259
<u>GLYCERA DIBRANCHIATA</u>	0	0.0	1	0.204
<u>GONIADA LITTORAEA</u>	8	0.980	11	2.240
<u>GRUPELEPIS MEXICANA</u>	1	0.123	0	0.0
<u>GYPHIS VITIATA</u>	1	0.123	0	0.0
<u>HAPLISCLOPLOS FOLIOSUS</u>	6	0.735	1	0.204
<u>HAPLISCLOPLOS FRAGILIS</u>	1	0.123	0	0.0
<u>LUMBRINERIS CRUZENSIS</u>	154	18.873	90	18.330
<u>LUMBRINERIS TETRAURA</u>	24	2.941	1	0.204
<u>NEODINASTYUS CALIFORNIENSIS</u>	3	0.368	1	0.204
<u>MICROPHIALMUS SP.</u>	2	0.245	0	0.0
<u>NEPHYS BUCERA</u>	2	0.245	0	0.0
<u>NEPHYS PICTA</u>	112	13.725	129	26.273

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
7/5/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOMASTUS HEMIPODUS</u>	2	0.245	1	0.204
<u>ONUPHIS EREMITA OCULATA</u>	22	2.696	10	2.037
<u>OWENIA FUSIFORMIS</u>	9	1.103	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.123	0	0.0
<u>PARACNIDES LYRA</u>	10	1.225	26	5.295
<u>PARACNIS FULGENS</u>	3	0.368	0	0.0
<u>PARAPRIONOSPIO PINNATA</u>	2	0.245	8	1.629
<u>PHYLLODOCE ARENAE</u>	2	0.245	2	0.407
<u>PRIONOSPIO CRISTATA</u>	13	1.593	5	1.018
<u>RULLIERINEREIS MEXICANA</u>	1	0.123	0	0.0
<u>SCOLELEPIS TEXANA</u>	1	0.123	0	0.0
<u>SCOLOPLOS RUBRA</u>	2	0.245	0	0.0
<u>SIGALICA AFENICOLA</u>	1	0.123	0	0.0
<u>SPICEHANES BCMBYX</u>	1	0.123	13	2.648
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.123	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOMAUSTORIUS SP.</u>	1	0.123	0	0.0
<u>AMPELISCA VADORUM</u>	1	0.123	0	0.0
<u>AMPELISCA VERRILLI</u>	9	1.103	7	1.426
<u>ARGISSA SP.</u>	1	0.123	0	0.0
<u>LISTRIELLA SP.</u>	4	0.490	2	0.407
<u>MICROPOTOPUS SP.</u>	3	0.368	0	0.0
<u>MONOCULODES SP.</u>	1	0.123	0	0.0
<u>PSEUDOPLATYSCHNOPUS SP.</u>	22	2.696	1	0.204
<u>SYNCELIDUM SP.</u>	21	2.574	0	0.0
UNIDENTIFIED SP.	1	0.123	0	0.0
ANCHURA				
<u>ALBINEA PAREII</u>	0	0.0	1	0.204
BRACHYLARA				
<u>PINNIXIA CHAETOPTERANA</u>	1	0.123	0	0.0
<u>PINNIXIA RETINENS</u>	3	0.368	0	0.0
CARIDEA				
<u>OGYRIDES ALPHAEROSTRIS</u>	0	0.0	1	0.204
<u>SYNALPHEUS SP.</u>	0	0.0	1	0.204
CUMACEA				
<u>CYCLAESIS SP.</u>	2	0.245	0	0.0
<u>CYCLAESIS VARIANS</u>	15	1.838	4	0.815
<u>XYULISTYLIS SMITHI</u>	0	0.0	2	0.407
PERAIDEA				
<u>PENAEUS DUORARUM</u>	1	0.123	2	0.407
 ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	0	0.0	1	0.204
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELITA QUINQUESPERECRATA</u>	2	0.245	0	0.0
HOLOTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPIA SP.</u>	0	0.0	10	2.037
OPHIOURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	0	0.0	1	0.204
 HEMICHORCATA				
ENTEROPNEUSTA (ACRON WORMS)				
UNIDENTIFIED SP.	2	0.245	0	0.0
 CEPHALOCORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	98	0.980	0	0.0



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

7/5/77  
(CONTINUED)

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	816		491	
NO. SPECIES		64		49
NO. IND. PER M2		3264		1964
S-B INDEX - H'(LN)		3.0767		2.6678
EVENNESS - J		0.7398		0.6855

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	1	0.137
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	11	0.851	3	0.411
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	33	2.554	16	2.192
BRACHIOPODA (LAMP SHELLS)				
GLOTTIDIA PYRAMIDATA	3	0.232	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	9	0.697	8	1.096
CYLICNELLA BIDENTATA	0	0.0	73	10.000
DIASOMA VARIUM	24	1.858	0	0.0
NATICA PUSILLA	10	0.774	2	0.274
POLINICES DUPLICATUS	1	0.077	0	0.0
TEREERA DISLOCATA	1	0.077	0	0.0
TURBINILLA CONRADI	3	0.232	1	0.137
PELECYPODA (CLAMS)				
ANADARA FLORICANA	0	0.0	3	0.411
ERYLLIA CONCENTRICA	26	2.012	0	0.0
LUCINA MULTILINEATA	31	2.399	15	2.055
NUCULANA ACUTA	0	0.0	6	0.822
TELLINA AEGUISTRIATA	6	0.464	5	0.685
TELLINA TAMPAENSIS	1	0.077	9	1.233
TELLINA TEXANA	0	0.0	6	0.822
TELLINA VERSICOLOR	180	13.932	102	13.973
TRACHYCARDIUM MURICATUM	4	0.310	1	0.137
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	18	1.393	0	0.0
POLYCHAETA				
APOPRIONOSPIO PYGMAEA	3	0.232	1	0.137
ARICIDEA CERRUTI	1	0.077	0	0.0
ARICIDEA FRAGILIS	3	0.232	0	0.0
ARMANDIA MACULATA	12	0.929	3	0.411
BRANCHIOASYCHIS AMERICANA	0	0.0	5	0.685
CERATIONEREIS IRRITABILIS	2	0.155	18	2.466
CHONE SP.	31	2.399	0	0.0
CISTENIDES GOULDII	0	0.0	1	0.137
DIOPATRA CLPREA	0	0.0	33	4.521
DORVILLEA SOCIABILIS	3	0.232	0	0.0
ENOPLORHYNCHUS SANGUINEUS	1	0.077	0	0.0
EUCONE LACTEA	9	0.697	0	0.0
GLYCERA AMERICANA	35	2.709	0	0.0
GLYCERA DIBRANCHIATA	7	0.542	4	0.548
GLYCINE SOLITARIA	0	0.0	4	0.548
GONIADA LITTOREA	10	0.774	1	0.137
GYPTIS BREVIPALPA	4	0.310	0	0.0
HAPLISCLOPELOS FRAGILIS	1	0.077	0	0.0
HARMOTHOE IMBRICATA	0	0.0	1	0.137
LODINIA MEDUSA	3	0.232	3	0.411
LUMBRINERIS CRUZENSIS	373	28.870	2	1.096
LUMBRINERIS TETRAURA	21	1.625	1	0.137

## TREASURE ISLAND MOTEL (STATIC 1) - CONTROL AND EXPERIMENTAL

8/2/77  
(CONTINUED)

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
MAGELCNA LONGICORNIS	0	0.0	2	0.274
MEDIONASTUS CALIFORNIENSIS	0	0.0	10	1.370
NEOSCHAEYOPTERUS SAGITTARIUS	10	0.774	24	3.288
MINUSPID CIRRIFERA	0	0.0	3	0.411
NEANTLES SUCCINEA	0	0.0	14	1.918
NEPHIYS BUCERA	4	0.310	0	0.0
NEPHIYS PICTA	65	5.031	7	0.959
NEREIS SP.	0	0.0	1	0.137
NOTOMASTUS HEMIPODUS	4	0.310	3	0.411
ONUPPIS EREMITA OCULATA	16	1.238	4	0.548
OWENIA FUSIFORMIS	1	0.077	1	0.137
PARACNIDES LYRA	15	1.161	2	0.274
PARACNIDES FULGENS	4	0.310	0	0.0
PARABRIONOSPID PINNATA	0	0.0	11	1.507
PHYLLODOCE ARENAE	9	0.697	4	0.548
POLYDORA SOCIALIS	0	0.0	2	0.274
POLYDORA TETRABRANCHIA	1	0.077	0	0.0
PRIONOSPID CRISTATA	96	7.430	75	10.274
PSEUDEURYTHOE AMBIGUA	1	0.077	0	0.0
RULLIERINEREIS MEXICANA	2	0.155	1	0.137
SIGAMBRA BASSI	1	0.077	0	0.0
SIGAMBRA TENTACULATA	2	0.155	109	14.932
SPID PETTIBONEAE	6	0.464	0	0.0
SPIOPHANES BOMBYX	6	0.464	0	0.0
STHELELAIS BOA	0	0.0	3	0.411
STREPTOSYLLIS ARENAE	1	0.077	0	0.0
SIPUNCULICA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.077	1	0.137
ECHIURIDA (ECHIURIDS)				
UNIDENTIFIED SP.	0	0.0	3	0.411
ARTHOPODA (CRUSTACEANS)				
AMPHIPCCA				
ACANTHOHAUSTORIUS SP.	1	0.077	0	0.0
AMPELISCA VERRILLI	46	3.560	9	1.233
ERICHTHONIUS SP.	1	0.077	2	0.274
LISIBELLA SP.	0	0.0	2	0.274
PSEUDOPLATYSCYNOPUS SP.	20	1.548	1	0.137
SYNCELIDIUM SP.	20	1.548	6	1.096
ANOMURA				
ALBONEA PARETII	2	0.155	0	0.0
BRACHYURA				
CSACHILA TUBEFOSA	2	0.155	0	0.0
FANCIERUS HERBERTI	0	0.0	8	1.096
PINKIXIA RELINENS	2	0.155	0	0.0
PINKIXIA SP.	0	0.0	2	0.274
PINKIXIHERES OSTREUM	1	0.077	0	0.0
PORTULUS SAYI	0	0.0	6	0.822
CALLINASSIDAE				
CALLINASSA JAMAICENSE	1	0.077	1	0.137
CARIDEA				
LATREUTES PARVULUS	0	0.0	3	0.411
PROCESSA FEMPHILLI	6	0.464	4	0.548
CUMACEA				
CYCLASSIS SP.	6	0.464	1	0.137
CYCLASSIS VARIANS	8	0.619	9	1.233
CRYDERSYLLIS SHIIMI	9	0.697	1	0.137
ISCPCDA				
APANTHURA MAGNIFICA	1	0.077	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
8/2/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
LEPTOSTRACA				
<u>NEBALIA SP.</u>	8	0.619	2	0.274
MYSIDACEA				
<u>MYSIDOPSIS BIGELOWI</u>	3	0.232	0	0.0
OSTRACCA				
UNIDENTIFIED SP.	4	0.310	7	0.959
PENAEIDAE				
<u>ACETES AMERICANUS</u>	2	0.155	0	0.0
<u>SICYPTIA SP.</u>	1	0.077	1	0.137
<u>BRACHYDONTES CONRICTUS</u>	0	0.0	11	1.507
ECHINODERMATA				
ECHINIDEA (SAND DOLLARS; URCHINS)				
<u>LYTECHINUS VARIEGATUS</u>	2	0.155	0	0.0
<u>NOVA ATRIPS</u>	2	0.155	34	4.658
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTIA SP.</u>	4	0.310	2	0.274
OPHIURIDEA (BRITTLE STARS)				
<u>HEMIPHOLIS ELCNGATA</u>	0	0.0	1	0.137
<u>MICROPHOLIS GRACILLINA</u>	2	0.155	0	0.0
<u>OPHIOPHAGUS BURDEMANI</u>	1	0.077	0	0.0
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.077	1	0.137
CEPHALOCORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	10	0.774	0	0.0
VERTEBRATA				
PISCES (FISHES)				
GOBIIIDAE, UNIDENTIFIED SP.	1	0.077	0	0.0
TOTALS	1292		730	
NO. SPECIES	80		70	
NO. IND. PER M2	5168		2920	
S-W INDEX - H'(LN)	3.0096		3.2331	
EVENNESS - J	0.6868		0.7610	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>CNICARIA</b>				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.112	2	1.818
<b>PLATYHELMINTHES</b>				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.112	0	0.0
<b>NEMERTINEA (RIBBON WORMS)</b>				
UNIDENTIFIED SP.	26	2.912	5	4.545
<b>NEMATODA (ROUNDWORMS)</b>				
UNIDENTIFIED SP.	5	0.560	0	0.0
<b>MOLLUSCA (SHELLFISH)</b>				
GASTROPODA (SNAILS)				
ACTEOPCINA CANDEI	4	0.448	0	0.0
ANACIS FLORIDANA	3	0.336	0	0.0
CYLICHELLA BIDENTATA	3	0.336	0	0.0
DIASTOMA VARIUM	116	12.990	0	0.0
NASSARIUS ACUTUS	0	0.0	9	8.182
NATICA PLSILLA	4	0.448	2	1.818
TEREBRA DISLOCATA	4	0.448	2	1.818
TURBNILLA CONRADI	1	0.112	0	0.0
PELECYPODA (CLAMS)				
ANADARA FLORIDANA	0	0.0	1	0.909
ERVILIA CONCENTRICA	28	3.135	0	0.0
LUCINA MULTILINEATA	9	1.008	0	0.0
NUCULANA ACUTA	0	0.0	1	0.909
PERIPLCMA MARGARITACEUM	15	1.680	0	0.0
TELLINA AEGUISTRIATA	4	0.448	0	0.0
TELLINA TEXANA	6	0.672	7	6.364
TELLINA VERSICOLOR	138	15.454	13	11.818
<b>ANNELIDA (SEGMENTED WORMS)</b>				
OLIGOCHAETA				
UNIDENTIFIED SP.	18	2.016	1	0.909
POLYCHAETA				
AGLAPFAMUS VERRILLI	1	0.112	0	0.0
APOEIONOSPION PYGMAEA	2	0.224	1	0.909
ARICIDEA FAUVELI	4	0.448	0	0.0
ARICIDEA FRAGILIS	2	0.224	0	0.0
ARICIDEA SUECICA	1	0.112	0	0.0
ARMANCIA AGILIS	1	0.112	0	0.0
BRANIA WELFLEETENSIS	3	0.336	0	0.0
CAPITELLA CAPITATA	0	0.0	1	0.909
CAULLERYELLA SP.	1	0.112	0	0.0
CERATONEREIS IRRITIABILIS	0	0.0	4	3.636
CHONE SP.	13	1.456	0	0.0
DIOPATRA CUPREA	0	0.0	3	2.727
DRIESCHIA PELLUCIDA	0	0.0	1	0.909
EIEONE LACIEA	3	0.336	0	0.0
GLYCERA AMERICANA	3	0.336	0	0.0
GLYCERA DIBRANCHIATA	10	1.120	2	1.818
GLYCINE SOLITARIA	0	0.0	1	0.909
GCNIACA LITTOREA	7	0.784	0	0.0
HAPLISCELCPLIS FOLIOSUS	2	0.224	0	0.0
LOPIA VIRIDIS	1	0.112	0	0.0
LUMBERNERIS CRUZENSIS	252	28.219	1	0.909
LUMBERNERIS TETRAURA	8	0.896	0	0.0

## TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MEDICMASTUS CALIFORNIENSIS</u>	1	0.112	0	0.0
<u>MESOCALOPTERUS SAGITTARIUS</u>	1	0.112	0	0.0
<u>NEANIMES ACUMINATA</u>	1	0.112	0	0.0
<u>NEANIMES SUCCINEA</u>	0	0.0	1	0.909
<u>NEPHIYS PICTA</u>	14	1.568	1	0.909
<u>NOTOMASTUS HEMIPODUS</u>	5	0.560	1	0.909
<u>ONUPHIS EREMITA OCULATA</u>	22	2.464	1	0.909
<u>OMENIA FLISIFORMIS</u>	1	0.112	0	0.0
<u>PARACNIDES LYRA</u>	25	2.800	0	0.0
<u>PARAFRICOSPID PINNATA</u>	0	0.0	5	4.545
<u>PHYLLOCOCE ARENAE</u>	6	0.672	0	0.0
<u>FRICOSPIC CRISTATA</u>	2	0.224	0	0.0
<u>ESEUDEURYTHOE AMBIGUA</u>	1	0.112	0	0.0
<u>BULLYERIDEIS MEXICANA</u>	10	1.120	2	1.818
<u>SCOLELEPIS TEXANA</u>	3	0.336	0	0.0
<u>SIGAMMA BASSI</u>	1	0.112	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	1	0.909
<u>SPIOPHANES BOMBYX</u>	1	0.112	0	0.0
SIPLUNCULIDA (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.112	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOMHAUSTORIUS SP.</u>	3	0.336	0	0.0
<u>AMPELISCA VERRILLI</u>	6	0.672	0	0.0
<u>LEPTACTYLUS SP.</u>	2	0.224	0	0.0
<u>LISTERIELLA SP.</u>	1	0.112	0	0.0
<u>PSEUDOPLATYISCHNOPUS SP.</u>	28	3.135	0	0.0
<u>SYNCELIDION SP.</u>	13	1.456	0	0.0
ANCHURA				
<u>ALBUNEA PARETI</u>	2	0.224	0	0.0
<u>PAGURUS LONGICARPUS</u>	5	0.560	0	0.0
BRACHYURA				
<u>PLANILIA SAYANA</u>	0	0.0	1	0.909
CUMACEA				
<u>CYCLAPSIS SP.</u>	2	0.224	0	0.0
<u>CYCLAPSIS VARIANS</u>	14	1.568	0	0.0
ISCOPEA				
<u>EDOTEA MCNIOSA</u>	1	0.112	0	0.0
MYSIDACEA				
<u>BOWMANIELLA SP.</u>	0	0.0	2	1.818
<u>MYSIDOPSIS BIGELOWI</u>	0	0.0	2	1.818
<u>UNIDENTIFIED SP.</u>	1	0.112	0	0.0
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	1	0.112	0	0.0
PENAEIDEA				
<u>ACEIES AMERICANUS</u>	0	0.0	2	1.818
ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>NOIRA AISCPS</u>	1	0.112	0	0.0
<u>PELLITA QUINQUESPERFORATA</u>	6	0.672	0	0.0
HOLOTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTIA SP.</u>	0	0.0	1	0.909
OPHIUROIDEA (BRITTLE STARS)				
<u>HEMIPOLOIS ELONGATA</u>	0	0.0	28	25.455
<u>MICROPHOLIS GRACILLIMA</u>	3	0.336	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACRON WORMS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
9/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
UNIDENTIFIED SP.	1	0.112	5	4.545
CEPHALCCHCRDATA (LANCELETS) BRANCHIOSTOMA FLORIDAE	6	0.672	0	0.0
VERTEBRATA PISCES (FISHES) SYMPLEUS SP.	2	0.224	0	0.0
TOTALS	893		110	
NO. SPECIES		70		32
NO. IND. PER M2		3572		440
S-B INDEX - H <sup>2</sup> (LN)		2.8562		2.8449
EVENNESS - J		0.6723		0.8209

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/3/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.379	2	0.504
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.379	4	1.008
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	17	3.220	13	3.275
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.758	1	0.252
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	0	0.0	1	0.252
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	0	0.0	1	0.252
NASSARIUS ACUTUS	0	0.0	8	2.015
NATICA PUSILLA	1	0.189	0	0.0
TURBNILLA CONRADI	0	0.0	1	0.252
PELECYPODA (CLAMS)				
CHIONE CANCELLATA	1	0.189	0	0.0
ERVILIA CONCENTRICA	17	3.220	2	0.504
LUCINA MULTILINEATA	6	1.136	16	4.030
PERIPLOMA MARGARITACEUM	2	0.379	6	1.511
TELLINA AEGUSTRATA	0	0.0	1	0.252
TELLINA TEXANA	8	1.515	0	0.0
TELLINA VERSICOLOR	39	7.386	32	6.060
TRACHECARDIUM MURICATUM	1	0.189	0	0.0
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	24	4.545	12	3.023
POLYCHAETA				
APCPRICUSPIO PYGMAEA	1	0.189	1	0.252
ARICIDEA FRAGILIS	0	0.0	1	0.252
ARICIDEA SUECICA	3	0.568	1	0.252
ARMANDIA AGILIS	1	0.189	0	0.0
ARMANDIA MACULATA	1	0.189	1	0.252
FRANIA WELFLEETENSIS	3	0.568	0	0.0
CERATONEREIS IRRITABILIS	0	0.0	1	0.252
CHONE SP.	7	1.326	5	1.259
ETEONE LACTEA	2	0.379	9	2.267
GLYCERA AMERICANA	1	0.189	5	1.259
GLYCERA DIORANCHIATA	0	0.0	12	3.023
GONIADA LITTOREA	11	2.083	5	1.259
GRUBEULEPIS MEXICANA	1	0.189	0	0.0
HAPLCSOLOPLOS FOLIOLUS	6	1.136	3	0.756
LUMBRINERIS CRUZENSIS	207	39.205	107	26.952
LUMBRINERIS TETRAURA	6	1.136	27	6.801
MEDICMASTUS CALIFORNIENSIS	0	0.0	1	0.252
MESOCFAETOPTERUS SAGITTARIUS	1	0.189	4	1.008
NEANTLES ACUMINATA	2	0.379	0	0.0
NEANTLES SUCCINEA	1	0.189	0	0.0
NEPHYS PICTA	15	2.841	4	1.008
NOTOMASTUS HEMIPODUS	0	0.0	2	0.504
ONUPETIS FREMITA OCLATA	4	0.758	6	1.511



TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/3/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>PARANAITES SPECIOSA</u>	1	0.189	0	0.0
<u>PARACNICES LYRA</u>	18	3.409	25	6.297
<u>PARACNIS FULGENS</u>	1	0.189	0	0.0
<u>PARAPRIONOSPIO PINNATA</u>	1	0.189	0	0.0
<u>PHYLLODOCE ARENAE</u>	2	0.379	1	0.252
<u>PRIONOSPIO CRISTATA</u>	6	1.136	2	0.504
<u>RULLIERINEREIS MEXICANA</u>	11	2.083	5	1.259
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.252
<u>SCOLCIPLOS RUBRA</u>	0	0.0	2	0.504
<u>SIGAMBRA BASSI</u>	2	0.379	0	0.0
<u>SPIO PETTIBONEAE</u>	4	0.758	1	0.252
<u>SPIOCFAETOPTERUS OCULATUS</u>	7	1.326	1	0.252
 SIPUNCULICA (PEANUT WORMS)				
UNIDENTIFIED SP.	2	0.379	1	0.252
 ARTHROPODA (CRUSTACEANS)				
AMPHIPCA				
<u>ACANTHOGHAUSTORIUS SP.</u>	3	0.568	0	0.0
<u>AMPELISCA VERRILLI</u>	2	0.379	1	0.252
<u>GIYANOPSIS SP.</u>	1	0.189	0	0.0
<u>LEPIDACTYLUS SP.</u>	14	2.652	1	0.252
<u>LISTRIELLA SP.</u>	2	0.379	2	0.504
<u>PSEUDOPLATYISCHNOPUS SP.</u>	16	3.030	19	4.786
<u>SYNCELIDILM SP.</u>	4	0.758	7	1.763
ANCURA				
<u>ALBINEA PARETII</u>	0	0.0	1	0.252
<u>PAGURIS LONGICARPUS</u>	3	0.568	3	0.756
BRACHYURA				
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.252
<u>PINNOTHERES OSTREUM</u>	3	0.568	0	0.0
CARIDEA				
<u>PROCESSA TEMPHILLI</u>	1	0.189	1	0.252
CUMACEA				
<u>CYCLAESIS SP.</u>	4	0.758	7	1.763
<u>CYCLAESIS VARIANS</u>	2	0.379	2	0.504
<u>EXYUCCSTYLIS SMITHI</u>	1	0.189	2	0.504
<u>SPILICUMA SALLMANI</u>	0	0.0	1	0.252
MYSIDACEA				
<u>MYSIDOPSIS BIGELOWI</u>	2	0.379	2	0.504
OSTRACODA				
UNIDENTIFIED SP.	1	0.189	0	0.0
PENAEIDAE				
<u>LUCIFER FAXONI</u>	1	0.189	1	0.252
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.189	2	0.504
 ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MOIRA ATROPS</u>	2	0.379	0	0.0
OPHIURIDAE (BRITTLE STARS)				
<u>HENIOPHLLIS ELONGATA</u>	0	0.0	1	0.252
<u>HICHOPELLIS GRACILLIMA</u>	7	1.326	5	1.259
<u>OPHIOPHAGUS BURDEMANI</u>	1	0.189	0	0.0
UNIDENTIFIED SP.	2	0.379	1	0.252
 CEPHALOCORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	3	0.568	3	0.756

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
10/3/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	528		397	
NO. SPECIES		64		61
NO. IND. PER M2		2112		1588
S-W INDEX - H'(LN)		2.8345		3.1138
EVENNESS - J		0.6815		0.7575

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	1	0.328
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.275	1	0.328
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	29	3.994	27	8.852
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	1	0.138	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPOCA (SNAILS)				
<u>NASSARILS ACUTUS</u>	4	0.551	4	1.311
<u>NATICA FLUILLA</u>	1	0.138	1	0.328
<u>OLIVA SAYANA</u>	0	0.0	1	0.328
<u>OLIVELLA MUTICA</u>	4	0.551	0	0.0
<u>TEREBEA DISLOCATA</u>	4	0.551	1	0.328
<u>TURBICALLA CINEADI</u>	3	0.413	0	0.0
PELECYFIDA (CLAMS)				
<u>CHIONE CANCELLATA</u>	0	0.0	2	0.656
<u>DIPODOCYTA SEMIASPERA</u>	1	0.138	0	0.0
<u>ERYLIA CONCENTRICA</u>	4	0.551	0	0.0
<u>LUCINA MULTILINEATA</u>	10	1.377	5	1.639
<u>NUCULANA ACUTA</u>	0	0.0	1	0.328
<u>PERIPLCMA MARGARITACEUM</u>	10	1.377	0	0.0
<u>TELLIDORA CRISTATA</u>	1	0.138	0	0.0
<u>TELLINA IRIS</u>	0	0.0	3	0.984
<u>TELLINA TEXANA</u>	1	0.138	0	0.0
<u>TELLINA VERSICOLOR</u>	29	3.994	6	1.967
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	19	2.617	4	1.311
POLYCHAETA				
ANTINCE SP.	1	0.138	1	0.328
<u>ARICIDEA FAUVELI</u>	0	0.0	1	0.328
<u>ARICIDEA FRAGILIS</u>	3	0.413	6	1.967
<u>ARICIDEA PHILGINAE</u>	1	0.138	0	0.0
<u>ARMANDIA MACULATA</u>	7	0.964	0	0.0
<u>CAULLERIELLA SP.</u>	1	0.138	0	0.0
<u>CHAELOZONE SETOSA</u>	1	0.138	0	0.0
<u>CHLOEIA VIRIDIS</u>	1	0.138	0	0.0
<u>CHONE SP.</u>	10	1.377	1	0.328
<u>CYSTENIDES GOLLODI</u>	1	0.138	0	0.0
<u>EYONE LACTEA</u>	13	1.791	1	0.328
<u>EULALIA SANGUINEA</u>	0	0.0	1	0.328
<u>GLYCERA AMERICANA</u>	8	1.102	2	0.656
<u>GLYCERA DIBRANCHIATA</u>	2	0.275	25	8.197
<u>GONIADA LITTORAE</u>	4	0.551	2	0.656
<u>GRUBEULEFIS MEXICANA</u>	1	0.138	0	0.0
<u>GYPTIS BREVIPALPA</u>	1	0.138	0	0.0
<u>HAPLISCELLUS FOLIOSUS</u>	2	0.275	0	0.0
<u>HARPATICE LUNULATA</u>	0	0.0	1	0.328
<u>LUMBICINERIS CRUZENSIS</u>	235	32.369	47	15.410
<u>LUMBICINERIS TETRAURA</u>	20	2.755	3	0.984
<u>NAGELINA FIDJAI</u>	0	0.0	1	0.328

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MEDIONASTILS CALIFORNIENSIS</u>	1	0.138	2	0.656
<u>NEANTHES SUCCINEA</u>	2	0.275	0	0.0
<u>NEPHIYS PICTA</u>	11	1.515	7	2.295
<u>NOTOMASTILS HEMIPODUS</u>	5	0.689	6	1.967
<u>ONUPHIS EREMITA OCULATA</u>	8	1.102	7	2.295
<u>PARANATHES SPECIOSA</u>	0	0.0	1	0.328
<u>PARACNIDES LYRA</u>	37	5.096	75	24.590
<u>PARACNIS FULGENS</u>	5	0.689	0	0.0
<u>PARAPRICACSPIC PINNATA</u>	2	0.275	1	0.328
<u>PHERUS EHLERSI</u>	1	0.138	0	0.0
<u>PHYLLIDICE ARENAE</u>	1	0.138	0	0.0
<u>POLYACIDAE UNIDENTIFIED SP.</u>	1	0.138	1	0.328
<u>PRIONOSPIO CRISTATA</u>	38	5.234	2	0.656
<u>RULLIERINEREIS MEXICANA</u>	23	3.168	4	1.311
<u>SCOLOPLOS RUBRA</u>	1	0.138	0	0.0
<u>SPIO PETTIBONEAE</u>	3	0.413	1	0.328
<u>THARIX ANNULOSUS</u>	1	0.138	0	0.0
 SIPUNCULICA (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	2	0.275	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>AMPELISCA VERRILLI</u>	3	0.413	1	0.328
<u>ERICHONILS SP.</u>	2	0.275	1	0.328
<u>PARAPHOXUS SP.</u>	3	0.413	0	0.0
<u>PSEUDOPLATYLSCHNOPUS SP.</u>	22	3.030	26	8.525
<u>SYNCHELIDUM SP.</u>	10	1.377	2	0.656
ANCMURA				
<u>ALBINEA PARETII</u>	3	0.413	1	0.328
<u>EUCERAMUS PRAELONGUS</u>	0	0.0	1	0.328
<u>PAGURIS LONGICARPUS</u>	7	0.964	0	0.0
BRACHYLARA				
<u>OVALIPES OCELLATUS</u>	1	0.138	1	0.328
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.328
CALLINASSIDAE				
<u>CALLINASSA JAMAICENSE</u>	0	0.0	1	0.328
CUMACEA				
<u>CYCLAPSI SP.</u>	10	1.377	1	0.328
<u>CYCLAPSI VARIANS</u>	3	0.413	2	0.656
<u>OXYUECSTYLIS SMITHI</u>	8	1.102	1	0.328
LEPTOSTRACA				
<u>NEBALIA SP.</u>	1	0.138	3	0.984
MYSTACEA				
<u>ROMMANIELLA SP.</u>	1	0.138	0	0.0
<u>MYSTICOPSIS BIGELOWI</u>	1	0.138	0	0.0
OSTRACOCA				
<u>UNIDENTIFIED SP.</u>	3	0.413	1	0.328
PENAIDEA				
<u>TRACYPENAEUS CONSTRICTUS</u>	1	0.138	0	0.0
TANAIDACEA				
<u>UNIDENTIFIED SP.</u>	1	0.138	0	0.0
 ECHINODERMATA				
ECHINOICEA (SAND DOLLARS; URCHINS)				
<u>MOIRA AIROPS</u>	2	0.275	0	0.0
<u>MELLITA OLINQUIE SPERFECRATA</u>	55	7.576	0	0.0
OPHTHURICEA (BRITTLE STARS)				
<u>MICROPHOLIS GRACILLIMA</u>	3	0.413	3	0.984
<u>OPHICHTHURUS WURDEMANI</u>	0	0.0	1	0.328
 CEPHALOCHORDATA (LANCELETS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL  
11/1/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>FRANCIOSIOMA FLORIDAE</u>	9	1.240	2	0.656
TOTALS	726		305	
NO. SPECIES		72		54
NO. IND. PER M2		2904		1220
S-W INDEX - $H^*(LN)$		3.0299		2.8764
EVENNESS - J		0.7085		0.7211

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL  
7/11/77

SPECIES	NO. OF IND. (C <sub>1</sub> )		NO. OF IND. (E <sub>2</sub> )	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.048	5	0.330
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.095	5	0.330
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	51	2.425	52	3.435
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	9	0.428	0	0.0
BRACHIOPOCA (LAMP SHELLS)				
<u>GLOTTIDIA PYRAMIDATA</u>	8	0.380	4	0.264
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCINA CANALICULATA</u>	1	0.048	0	0.0
<u>ACTECCINA CANDEI</u>	39	1.854	1	0.066
<u>BULLA STRIATA</u>	1	0.048	0	0.0
<u>CAECUM IMBRICATUM</u>	2	0.095	0	0.0
<u>CYLICENELLA BIDENTATA</u>	2	0.095	6	0.396
<u>DIASICMA VARIUM</u>	18	0.856	1	0.066
<u>NATICA PUSILLA</u>	6	0.285	0	0.0
<u>OLIVA SAYANA</u>	1	0.048	0	0.0
<u>POLINICES DUPLICATUS</u>	3	0.143	3	0.198
<u>TEREBRA DISLOCATA</u>	1	0.048	0	0.0
PELECYPODA (CLAMS)				
<u>ERVILIA CONCENTRICA</u>	52	2.473	0	0.0
<u>LEPTON SP.</u>	0	0.0	3	0.198
<u>LUCINA MULTILINEATA</u>	167	7.941	45	2.972
<u>PERIPLECHA MARGARITACEUM</u>	8	0.380	1	0.066
<u>PITAR SIMPSONI</u>	4	0.190	0	0.0
<u>SOLEN VIRIDIS</u>	0	0.0	1	0.066
<u>TELLINA AEGULSTRATA</u>	1	0.048	1	0.066
<u>TELLINA TAMPAENSIS</u>	3	0.143	0	0.0
<u>TELLINA TEXANA</u>	20	0.951	9	0.594
<u>TELLINA VERSICOLOR</u>	182	8.654	68	4.491
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	1.664	17	1.123
POLYCHAETA				
<u>AGLACPHANUS VERRILLI</u>	1	0.048	0	0.0
<u>APROPILACSPID PYGMAEA</u>	7	0.333	12	0.793
<u>ARICIDEA CERENTI</u>	1	0.048	0	0.0
<u>ARICIDEA FRAGILIS</u>	10	0.476	16	1.255
<u>ARICIDEA PHILEINAE</u>	5	0.238	0	0.0
<u>ARICIDEA SUCCICA</u>	0	0.0	11	0.727
<u>ARMADIA AGILIS</u>	0	0.0	5	0.330
<u>ARMADIA MACULATA</u>	0	0.0	1	0.066
<u>CARAZZIELLA SP.</u>	6	0.285	0	0.0
<u>CAULLERIELLA SP.</u>	1	0.048	0	0.0
<u>CHONE SP.</u>	53	2.520	15	0.991
<u>CISTENIDES GOULDII</u>	0	0.0	1	0.066
<u>DISPID UNCINATA</u>	0	0.0	5	0.330
<u>ETECNE LACTEA</u>	10	0.476	0	0.0
<u>GLYCERA AMERICANA</u>	104	4.945	102	6.737

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL  
7/11/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
GLYCEFA DIBRANCHIATA	0	0.0	2	0.132
GLYCEFA LITTYCEA	18	0.856	15	0.991
GRUBEULEPIS MEXICANA	2	0.095	0	0.0
GYPHIS VITTATA	4	0.190	4	0.264
HAPLISCYLLOPUS FOLIOSUS	1	0.048	4	0.264
HAPLISCYLLOPUS FRAGILIS	3	0.143	3	0.198
HAPLISCYLLOPUS ROBUSTUS	0	0.0	2	0.132
HARMITHCE LUNULATA	1	0.048	0	0.0
LUMBINEPIS CRUZENSIS	391	18.592	249	16.446
LUMBINEPIS TETRAURA	22	1.046	6	0.396
MAGELINA LONGICORNIS	0	0.0	1	0.066
MAGELINA SP.	3	0.143	2	0.132
MEDICMASTUS CALIFORNIENSIS	5	0.238	1	0.066
MESOCYCAETOPTERUS SAGITTARIUS	0	0.0	1	0.066
MICROPHthalmus SP.	1	0.048	0	0.0
NEANTHES ACUMINATA	3	0.143	2	0.132
NEANTHES SUCCINEA	0	0.0	2	0.132
NEPHYS BUCERA	4	0.190	4	0.264
NEPHYS PICTA	280	13.314	391	25.826
NEREIS LAMELLOSA	0	0.0	2	0.132
NOTICMASTUS HEMIPODUS	1	0.048	2	0.132
ONUPHIS EREMITA OCULATA	54	2.568	37	2.444
ONUPHIS NEBULOSA	5	0.238	0	0.0
OWENIA FUSIFORMIS	5	0.238	4	0.264
PARANATHES SPECIOSA	1	0.048	0	0.0
PARACNIDES LYRA	53	2.520	148	9.775
PARACNIDES FULGENS	6	0.285	0	0.0
PARAPRONOSPION PINNATA	2	0.095	6	0.396
PHYLLODOCE ARENAE	3	0.143	2	0.132
PODARKE OBSCURA	1	0.048	0	0.0
POECILOCHAETUS JOHNSONI	1	0.048	2	0.132
PRICNISPIC CRISTATA	27	1.284	12	0.793
PSEUDEURYTHCE AMBIGUA	1	0.048	0	0.0
RULLIENINEREIS MEXICANA	4	0.190	0	0.0
SABELLA MICROPHthALMA	0	0.0	1	0.066
SCOLELEPIS SCUANATA	4	0.190	0	0.0
SCOLELEPIS TEXANA	0	0.0	1	0.066
SCYLLOPUS ARMIGER	6	0.285	6	0.396
SCYLLOPUS RUERA	2	0.095	0	0.0
SIGALIN ARENICOLA	2	0.095	0	0.0
SIGAMERA BASSI	2	0.095	0	0.0
SPIO PETTIBONEAE	0	0.0	1	0.066
SPIOCYCAETOPTERUS OCULATUS	0	0.0	1	0.066
SPIOPLANES DOMBYX	18	0.856	27	1.783
SIPUNCULIDA (PEANUT WORMS)				
GOLFINGIA TRICHOCEPHALA	1	0.048	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOAUSTORIUS SP.	2	0.095	0	0.0
AMPELISCA ABDITA	11	0.523	2	0.132
AMPELISCA VADORUM	5	0.238	0	0.0
AMPELISCA VERRILLI	40	1.902	37	2.444
ARGISSA SP.	1	0.048	2	0.132
CAPRELLIDAE UNIDENTIFIED SP.	3	0.143	2	0.132
ERICHTHENIUS SP.	2	0.095	0	0.0
GAMMAROPEIS SP.	1	0.048	0	0.0
LISTRIELLA SP.	12	0.571	3	0.198
LYSIANESUS SP.	1	0.048	1	0.066
MONICULIDES SP.	2	0.095	1	0.066

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL  
7/11/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<del>PAGETIS SP.</del>	6	0.285	0	0.0
<del>PROCTAUSTORIUS SP.</del>	0	0.0	1	0.066
<del>PSEUDOPLATYISCHNIDUS SP.</del>	26	1.236	15	0.991
<del>SYNCELIUM SP.</del>	68	3.233	40	2.642
ANOMURA				
<del>ALBUEA FARETII</del>	0	0.0	1	0.066
BRACHYURA				
<del>PINNIXIA CYLINDRICA</del>	4	0.190	0	0.0
<del>PORTUNUS SP.</del>	0	0.0	12	0.793
PORTUNIDAE UNIDENTIFIED SP.	6	0.285	0	0.0
CARIDEA				
<del>OGYRIDES ALPHAEOSTRIS</del>	0	0.0	6	0.396
<del>OGYRIDES LIMICULA</del>	0	0.0	2	0.132
<del>PERCELAENES LONGICAUCATUS</del>	0	0.0	1	0.066
<del>PROCESSA HEMPHILLI</del>	5	0.238	3	0.198
CUMACEA				
<del>CYCLAPSIS SP.</del>	16	0.903	4	0.264
<del>CYCLAPSIS VARIANS</del>	82	3.899	22	1.453
<del>GYMNOSTYLIS SMITHI</del>	24	1.141	5	0.330
LEPTOSTRACA				
<del>NEBALIA SP.</del>	1	0.048	1	0.066
MYSTACEA				
UNIDENTIFIED SP.	1	0.048	1	0.066
OSTRACODA				
UNIDENTIFIED SP.	1	0.048	0	0.0
PENAEIDA				
<del>TRACHYPENAEUS CONSTRICTUS</del>	0	0.0	2	0.132
STOMATOPODA				
<del>ACANTHOSQUILLA BIRNIEI</del>	1	0.048	0	0.0
ECHINODERMATA				
HOLOTHURIDAE (SEA CUCUMBERS)				
<del>LEPTOSYNAPTUS SP.</del>	3	0.143	11	0.727
OPHIURIDAE (BRITTLE STARS)				
<del>OPHIOPHAGUS BURDEMANI</del>	1	0.048	0	0.0
UNIDENTIFIED SP.	6	0.285	3	0.198
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.048	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<del>BRANCHIOSTOMA FLORIDAE</del>	14	0.666	2	0.132
VERTEBRATA				
PISCES (FISHES)				
<del>HEMIFRENCIUS NOVACULA</del>	2	0.095	0	0.0
TOTALS	2103		1514	
NO. SPECIES	99		81	
NO. IND. PER M2	3365		2422	
S-W INDEX - M'(LN)	3.2301		2.8504	
EVENNESS - J	0.7029		0.6577	



SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL  
7/15/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>Cnidaria</b>				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.043	0	0.0
<b>Platyhelminthes</b>				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	12	0.512	16	0.663
<b>Nemertinea (Ribbon Worms)</b>				
UNIDENTIFIED SP.	57	2.432	45	1.864
<b>Nematoda (Roundworms)</b>				
UNIDENTIFIED SP.	16	0.683	10	0.414
<b>Brachiozoa (Lamp Shells)</b>				
GLOTHICIA PYRAMIDATA	10	0.427	10	0.414
<b>Mollusca (Shellfish)</b>				
GASTROPODCA (SNAILS)				
ACTECCINA CANALICULATA	0	0.0	1	0.041
ACTECCINA CANDEI	19	0.811	32	1.326
ANACIS FLORICANA	0	0.0	1	0.041
BULLA STRIATA	1	0.043	4	0.166
CYLLINELLA BIDENTATA	4	0.171	4	0.166
LIASICMA VARIUM	21	0.896	16	0.663
NATICA PUSILLA	10	0.427	21	0.870
OLIVELLA BULLULA	1	0.043	1	0.041
OLIVELLA MINUTA	0	0.0	3	0.124
OLIVELLA MUTICA	3	0.128	0	0.0
POLINICES DUPLICATUS	1	0.043	2	0.083
TEREBRA DISLOCATA	2	0.085	0	0.0
TURBNILLA ELEGANTULA	1	0.043	1	0.041
<b>PELECYPODA (CLAMS)</b>				
ANATIA ANATINA	3	0.128	2	0.083
ERVILIA CONCENTRICA	41	1.749	44	1.823
LAEVICAEDUM LAEVIGATUM	5	0.213	16	0.663
LEPICA SP.	2	0.085	0	0.0
LUCINA MULTILINEATA	191	8.148	19	0.787
MACRALLISTA NIMBOSA	0	0.0	1	0.041
MUSCULUS LATERALIS	1	0.043	0	0.0
PERIELCMA MARGARITACEUM	5	0.213	18	0.746
PIYAS SIMPSONI	0	0.0	1	0.041
TELLINA AEGUISIRIATA	6	0.256	4	0.166
TELLINA TEXANA	19	0.811	5	0.373
TELLINA VERSICOLOR	262	11.177	196	8.119
TRACFYCARDIUM MURICATUM	3	0.128	9	0.373
VARICORRULA OPERCULATA	5	0.213	0	0.0
VENERICAE UNIDENTIFIED SP.	53	2.261	45	1.864
<b>Annelida (Segmented Worms)</b>				
OLIGOCHAETA				
UNIDENTIFIED SP.	46	1.962	55	2.278
POLYCHAETA				
APOEIGNOSPLO PYGMAEA	2	0.085	6	0.249
ARICILEA FRAGILIS	9	0.384	2	0.083
ARICILEA PHILBINAE	7	0.299	0	0.0
ARICILEA SUECICA	0	0.0	1	0.041
ARICILEA SP.	0	0.0	2	0.083
ARMANCIA AGILIS	10	0.427	13	0.539
ARMANCIA MACULATA	13	0.555	21	0.870

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL  
7/15/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
BRANIA WELFLEETENSIS	1	0.043	0	0.0
CAPITELLA CAPITATA	0	0.0	3	0.124
CERATONEURIS IRRITABILIS	0	0.0	1	0.041
CHONE SP.	28	1.195	30	1.243
CYRRIPIIDUS LYRIFORMIS	9	0.384	15	0.621
CISTERNADES GOULDII	2	0.085	1	0.041
DISPID UNCINATA	0	0.0	2	0.083
EYECHE LACTEA	10	0.427	6	0.249
EULALIA SANGUINEA	1	0.043	0	0.0
GLYCERA AMERICANA	87	3.712	92	3.811
GONIACA LITTOREA	18	0.768	13	0.539
GRUBELEPIS MEXICANA	3	0.128	1	0.041
GYPTIS VITTATA	7	0.299	3	0.124
HAPLISCILLICUS FOLICUS	2	0.085	2	0.083
HAPLISCILLOPS FRAGILIS	1	0.043	2	0.083
HARMITHOE LUNULATA	1	0.043	0	0.0
LUMBRINERIS CRUZENSIS	397	16.937	437	18.103
LUMBRINERIS TETRAURA	16	0.683	13	0.539
MAGELLANA SP.	2	0.085	5	0.207
MEDICASTILUS CALIFORNIENSIS	0	0.0	1	0.041
MICROCEPHALUS SCZELKOWII	1	0.043	0	0.0
MICROCEPHALUS SP.	3	0.128	0	0.0
NEANTHES ACUMINATA	1	0.043	1	0.041
NEPHYS BUCERA	5	0.213	3	0.124
NEPHYS PICTA	206	8.788	122	5.054
NEREIS LAMELLOSA	2	0.085	0	0.0
NOTICASTIUS HEMIPODUS	0	0.0	1	0.041
NOTICASTIUS LATERICEUS	1	0.043	0	0.0
OPHIS EREMITA OCULATA	34	1.451	51	2.113
OPHELIA SP.	1	0.043	0	0.0
OWENIA FUSIFORMIS	21	0.896	9	0.373
PARACNICES LYRA	83	3.541	42	1.740
PARACNICES FUIGENS	6	0.256	3	0.124
PARAPRIONOSPIO PINNATA	0	0.0	1	0.041
PHYLLODOCE ARENAE	1	0.043	11	0.456
PRIONOSPIO CRISTATA	44	1.877	46	1.906
RELLIERINERIS MEXICANA	5	0.213	7	0.290
SABELLA MICROPHYTHALMA	5	0.213	0	0.0
SCOLELEPIS TEXANA	0	0.0	2	0.083
SCOLELIPS ARMIGER	10	0.427	14	0.580
SCOLOPLOS RUDEA	1	0.043	1	0.041
SIGAMERA BASSI	0	0.0	1	0.041
SPHAEROSYLLIS SP.	0	0.0	1	0.041
SPIO PETTIBONEAE	1	0.043	1	0.041
SPIOPHANES BOMBYX	9	0.384	6	0.249
STREPTOSYLLIS ARENAE	0	0.0	1	0.041
WEBSTERINERIS TRIDENTATA	0	0.0	1	0.041
SIPUNCULICA (PEANUT WORMS)				
GOLFINGIA TRICHOCEPHALA	1	0.043	0	0.0
ARTUROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	7	0.299	12	0.497
AMPELISCA ADDITA	2	0.085	4	0.166
AMPELISCA VACCUM	4	0.171	4	0.166
AMPELISCA VERRILLI	32	1.365	56	2.320
ARGISSA SP.	4	0.171	6	0.249
CAPRELLIDAE UNIDENTIFIED SP.	4	0.171	2	0.083
CARINOBATEA SP.	1	0.043	0	0.0
ERICHTHONIS SP.	2	0.085	1	0.041

SLN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL  
7/15/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HIPPOMEDON SP.	1	0.043	1	0.041
LYSTRIELLA SP.	9	0.384	11	0.456
LYSIANOPSIS SP.	1	0.043	6	0.249
MELITA APPENDICULATA	4	0.171	1	0.041
MICRODEUTOPUS SP.	1	0.043	2	0.083
MONOCULODES SP.	3	0.128	7	0.290
PHOTIS SP.	1	0.043	1	0.041
PSEUDCHAUSTORIUS SP.	3	0.128	9	0.373
PSEUDCHAUSTORIUS SP.	38	1.621	36	1.491
PSEUDCELATYLSCHNIPUS SP.	57	2.432	72	2.983
SYNCELIDIUM SP.	69	2.944	81	3.355
UNIDENTIFIED SP.	4	0.171	1	0.041
ANOMURA				
ALBUEA FAREII	3	0.128	2	0.083
PAGUEUS LONGICARPUS	1	0.043	1	0.041
BRACHYLFA				
PINNIXIA SAYANA	1	0.043	6	0.249
PINNITHERES OSTREUM	6	0.256	0	0.0
PORTUNUS SP.	16	0.683	17	0.704
CARIDEA				
LATREUTES PARVULUS	0	0.0	1	0.041
OGYRIDES LIMICOLA	3	0.128	7	0.290
PROCESSA HEMPHILLI	10	0.427	20	0.829
CUMACEA				
CYCLAPSIS SP.	45	1.920	83	3.438
CYCLAPSIS VARIANS	59	2.517	229	9.486
GYROSTYLIS SMITHI	39	1.664	59	2.444
UNIDENTIFIED SP.	1	0.043	1	0.041
LEPTOSTRACA				
NEBALIA SP.	10	0.427	50	2.071
MYSIDACEA				
MYSIDOPSIS BIGELOWI	1	0.043	0	0.0
UNIDENTIFIED SP.	5	0.213	8	0.331
OSTRACCA				
UNIDENTIFIED SP.	1	0.043	6	0.249
PENAEIDAE				
SICYCNIA BREVIROSTRIS	0	0.0	2	0.083
TRACHYPENAEUS CONSTRICTUS	2	0.085	1	0.041
STOMATOPODA				
ACANTHOSQUILLA BIMINIENSIS	2	0.085	0	0.0
CORONIS EXCAVATRIX	0	0.0	1	0.041
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
LUIDIA ALTERNATA	1	0.043	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
LERISCYNAPIA SP.	1	0.043	2	0.083
OPHIURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	10	0.427	4	0.166
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.041
CEPHALOCHORDATA (LANCELETS)				
BRANCHISTOMA FLORIDAE	12	0.512	15	0.621
VERTEBRATA				
PISCES (FISHES)				
HEMIPTERONOTUS NOVACULA	0	0.0	1	0.041
LEPOPHIDIUM GRAELLI	0	0.0	1	0.041

SLN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL  
7/15/77  
(CONTINUED)

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT

TOTALS	2344		2414	
NO. SPECIES	112		114	
NO. IND. PER M2	3750		3662	
S-M INDEX - H' (LN)	3.4273		3.5029	
EVENNESS - J	0.7264		0.7396	

MILTON HOLICAY INN (STATION 3) - CONTROL & EXPERIMENTAL  
7/25/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	5	0.198
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	9	0.333	37	1.467
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	49	1.812	57	2.259
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	18	0.666	22	1.110
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	1	0.037	3	0.119
BRACHIOPODA (LAMP SHELLS)				
<u>GLOTTIDIA PYRAMIDATA</u>	0	0.0	4	0.159
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCINA CANALICULATA</u>	0	0.0	1	0.040
<u>ACTECCINA CANDEI</u>	27	0.999	10	0.396
<u>ANACIS FLORICANA</u>	1	0.037	1	0.040
<u>BULLA STREATA</u>	2	0.074	0	0.0
<u>CAECUM IMBRICATUM</u>	1	0.037	0	0.0
<u>CAECUM PULCHELLUM</u>	3	0.111	0	0.0
<u>CYLICNELLA BIDENTATA</u>	11	0.407	0	0.0
<u>CIASIMA VARIUM</u>	83	3.070	23	0.912
<u>HELANELLA JAMAICENSIS</u>	0	0.0	1	0.040
<u>NATICA PUSILLA</u>	46	1.701	30	1.189
<u>OLIVA SAYANA</u>	1	0.037	0	0.0
<u>OLIVELLA MINUTA</u>	5	0.185	4	0.159
<u>OLIVELLA MUTICA</u>	7	0.259	7	0.277
<u>PHILINE SAGRA</u>	0	0.0	4	0.159
<u>POLINICES DUPLICATUS</u>	1	0.037	1	0.040
<u>TURBOCILLA CONRADI</u>	6	0.222	11	0.436
PELECYPODA (CLAMS)				
<u>ANATINA ANATINA</u>	4	0.148	4	0.159
<u>ERVILIA CONCENTRICA</u>	27	0.999	18	0.713
<u>LAEVICARDIUM LAEVIGATUM</u>	1	0.037	0	0.0
<u>LEPTIS SP.</u>	10	0.370	4	0.159
<u>LUCINA MULTILINEATA</u>	53	1.960	69	2.735
<u>LYONSIA H. FLORICANA</u>	0	0.0	1	0.040
<u>MACOMA CONSTRICTA</u>	2	0.074	0	0.0
<u>PANDORA TRILINEATA</u>	0	0.0	1	0.040
<u>PERIPLOMA MARGARITACEUM</u>	2	0.074	2	0.079
<u>PITAE SIMPSONI</u>	47	1.738	29	1.149
<u>STRIGILLA MIRABILIS</u>	4	0.148	8	0.317
<u>TELLINA AEGUISIRIATA</u>	2	0.074	18	0.713
<u>TELLINA TEXANA</u>	363	13.425	349	13.833
<u>TELLINA VERSICOLOR</u>	203	7.507	166	6.579
<u>TRACLYCARDIUM MURICATUM</u>	3	0.111	2	0.079
VENERIDAE UNIDENTIFIED SP.	12	0.444	37	1.467
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	39	1.442	8	0.317
POLYCHAETA				

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL  
7/25/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
AMERICCAUPEHIS MAGNA	2	0.074	0	0.0
APPOPEICUSPIC PYGMAEA	1	0.037	2	0.079
ARICIDEA EFAGILIS	9	0.333	37	1.467
ARICIDEA PHILBINAE	0	0.0	1	0.040
ARICIDEA SUECICA	2	0.074	2	0.079
ARMANDIA AGILIS	6	0.222	3	0.119
ARMANDIA MACULATA	35	1.294	23	0.912
BRANIA CLAVATA	1	0.037	1	0.040
BRANIA WELFLEETENSIS	6	0.222	6	0.238
CHONE SP.	33	1.220	19	0.753
CIRRIPHORUS LYRIFORMIS	0	0.0	15	0.555
CISTENICES GOULDII	1	0.037	1	0.040
DIOPATRA CUPREA	0	0.0	4	0.159
DISPIC UNCINATA	0	0.0	5	0.198
ETECNE LACTEA	6	0.222	12	0.476
GLYCERA AMERICANA	20	0.740	19	0.753
GONIACA LITTOREA	6	0.222	0	0.0
GRUBBELLIPS MEXICANA	2	0.074	11	0.436
GYPTIS VITTATA	1	0.037	0	0.0
LAEONEREIS CULVERI	0	0.0	5	0.198
LOXIMIA MEDUSA	3	0.111	0	0.0
LUMBERNERIS CRUZENSIS	653	24.149	500	19.818
LUMBERNERIS TETRAURA	2	0.074	0	0.0
LYSIDICE NINETTA	1	0.037	0	0.0
MAGELCNA SP.	17	0.629	20	0.793
MEDICMASTUS CALIFORNIENSIS	1	0.037	0	0.0
MESOCHEILOPTERUS SAGITTARIUS	10	0.370	13	0.515
NEANTHES ACUMINATA	1	0.037	2	0.079
NEPHIYS BUCERA	9	0.333	12	0.476
NEPHIYS PICTA	81	2.996	71	2.814
NEREIS LAMELLCSA	1	0.037	0	0.0
NOTOMASTUS HEMIPODUS	2	0.074	3	0.119
NOTOMASTUS LATERICEUS	1	0.037	0	0.0
ONUPHIS EREMITA OCULATA	8	0.296	21	0.832
PARACNIDES LYRA	46	1.701	6	0.238
PARANIS FULGENS	10	0.370	3	0.119
PARAFICUSPID PINNATA	1	0.037	0	0.0
PARAFICUSYLLIS LONGICIRRATA	0	0.0	4	0.159
PHYLLIDICE ARENAE	1	0.037	6	0.238
PTECILCHAETUS JOHNSONI	0	0.0	1	0.040
PRICUSPIC CRISTATA	56	2.071	55	2.180
RULLIEFINEFIS MEXICANA	4	0.148	1	0.040
SABELLA MICROPHALMA	1	0.037	0	0.0
SCOLELEPIS TEXANA	3	0.111	3	0.119
SCCLIFLIS ARMIGER	2	0.074	1	0.040
SCCLIFLIS RUERA	1	0.037	1	0.040
SIGAMBRA BASSI	11	0.407	13	0.515
SPIO PETTIBONEAE	2	0.074	2	0.079
SPIOCHAETOPTERUS OCULATUS	1	0.037	1	0.040
SPIOPTANES DOMBYX	1	0.037	2	0.079
STREPTOSYLLIS ARENAE	0	0.0	1	0.040
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOCHAUSTORIUS SP.	1	0.037	0	0.0
AMPELISCA AEDITA	4	0.148	3	0.119
AMPELISCA VERRILLI	16	0.592	13	0.515
ARGISSA SP.	3	0.111	7	0.277
ELASMOCPUS SP.	1	0.037	0	0.0
LISTRIELLA SP.	9	0.333	7	0.277
MELITA APPENDICULATA	3	0.111	0	0.0

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL  
7/25/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MICRODEUTOPUS SP.</u>	10	0.370	4	0.159
<u>MONOCULODES SP.</u>	22	0.814	30	1.189
<u>PROTOFAUSTORIUS SP.</u>	146	5.399	242	9.592
<u>PSEUDOPALSTOMILS SP.</u>	9	0.333	4	0.159
<u>PSEUDOPLATYISCHNOPLS SP.</u>	118	4.364	115	4.558
<u>SYNCELIDIUM SP.</u>	26	0.962	41	1.625
ANOMURA				
<u>ALBUNEA PARETII</u>	3	0.111	5	0.198
<u>PAGURUS LONGICARPUS</u>	3	0.111	1	0.040
BRACHYURA				
<u>HEPATIS EPHELITICUS</u>	0	0.0	1	0.040
<u>OVALIPES OCELLATUS</u>	0	0.0	1	0.040
<u>PINNIXIA SAYANA</u>	12	0.444	0	0.0
<u>PINNITHERES OSTREUM</u>	1	0.037	0	0.0
<u>PORTUNUS SP.</u>	9	0.333	2	0.079
CARIDEA				
<u>LABRELTES PARVULUS</u>	1	0.037	0	0.0
<u>PROCESSA HEMPHILLI</u>	7	0.259	2	0.079
CLMACEA				
<u>CYCLAPSIS SP.</u>	22	0.814	55	2.338
<u>CYCLAPSIS VARIANS</u>	55	2.034	61	2.418
<u>OXYUFOSTYLIS SMITHI</u>	6	0.222	13	0.515
ISOPODA				
<u>EDOTEA MONTOSA</u>	1	0.037	0	0.0
LEPTOSTRACA				
<u>NERALIA SP.</u>	13	0.481	11	0.436
MYSIDACEA				
UNIDENTIFIED SP.	10	0.370	4	0.159
OSTRACODA				
UNIDENTIFIED SP.	14	0.518	17	0.674
PENAEIDEA				
<u>TRACHYPENAEUS CONSTRICTUS</u>	0	0.0	1	0.040
ECHINODERMATA				
OPHIURCIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	5	0.185	8	0.317
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	69	2.552	19	0.753
VERTEBRATA				
PISCES (FISHES)				
<u>HEMIPYTERONOTUS NOVACULA</u>	1	0.037	1	0.040
TOTALS	2704		2523	
NO. SPECIES	105		98	
NO. IND. PER M2	4326		4037	
S-W INDEX - H' (LN)	3.1958		3.2651	
EVENNESS - J	0.6867		0.7121	

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL  
7/26/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.079	1	0.062
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	11	0.435	1	0.062
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	36	1.422	34	2.103
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.062
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	0	0.0	1	0.062
BRACHIOPODA (LAMP SHELLS)				
GLYPTIDIA PYRAMICATA	1	0.040	8	0.495
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	0	0.0	1	0.062
CYLICHNELLA BIDENTATA	51	2.015	23	1.422
NATICA PUSILLA	36	1.422	10	0.618
OLIVELLA MINUTA	7	0.277	2	0.124
OLIVELLA MUTICA	7	0.277	3	0.186
PHILINE SAGRA	1	0.040	1	0.062
TURBENILLA CONRADI	5	0.198	1	0.062
TURBENILLA SP.	3	0.119	1	0.062
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	15	0.593	1	0.062
LEPTON SP.	29	1.146	1	0.062
LUCINA MULTILINEATA	13	0.514	157	5.709
PERIPLOMA MARGARITACEUM	0	0.0	1	0.062
PITAR SIMPSONI	114	4.504	18	1.113
STRIGILLA MIRABILIS	14	0.553	5	0.309
TELLINA AEGISIRIATA	0	0.0	4	0.247
TELLINA IRIS	0	0.0	11	0.680
TELLINA TEXANA	443	17.503	89	5.504
TELLINA VERSICOLOR	102	4.030	120	7.421
TRACHYCARDIUM MURICATUM	4	0.158	4	0.247
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	5	0.198	1	0.062
POLYCHAETA				
AONIDES MAYAQUEZENSIS	0	0.0	16	0.989
APOEIGNOSPION PYGMAEA	0	0.0	2	0.124
ARICIDEA FRAGILIS	0	0.0	1	0.062
ARMANCIA AGILIS	28	1.106	57	3.525
ARMANDIA MACULATA	19	0.751	17	1.051
FRANIA WELFLEETENSIS	13	0.514	13	0.804
CAPITELLA CAPITATA	2	0.079	33	2.041
CERATONEREIS IRRITABILIS	0	0.0	1	0.062
CHONE SP.	3	0.119	2	0.124
DISPIDUNCINATA	0	0.0	1	0.062
EYEDNE ALBA	1	0.040	0	0.0
EYEDNE LACTEA	9	0.356	1	0.062
GLYCERA AMERICANA	28	1.106	65	4.020



SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL

7/26/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
GONIACA LITTOREA	0	0.0	2	0.124
GRUEULEPIS MEXICANA	0	0.0	4	0.247
GYPTIS VITTATA	0	0.0	10	0.618
HAPLCSCOLOPLOS FOLIOSUS	0	0.0	7	0.433
HAPLCSCOLOPLOS FRAGILIS	2	0.079	2	0.124
HAPLCSCOLOPLOS ROBUSTUS	0	0.0	4	0.247
HEMIPODUS ROSEUS	1	0.040	0	0.0
LOIMIA MEDUSA	0	0.0	4	0.247
LUMBERINERIS CRUZENSIS	521	20.585	129	7.978
MAGELCNA SP.	10	0.395	4	0.247
MESOCFAETOPTERUS SAGITTARIUS	13	0.514	30	1.855
NEANITES ACUMINATA	0	0.0	3	0.186
NEPHIYS BUCERA	26	1.027	12	0.742
NEPHIYS PICTA	2	0.079	143	8.844
NOTOMASTUS HEMIPODUS	0	0.0	1	0.062
ONUPFIS EREMITA OCVLATA	22	0.869	10	0.618
OPHELIA SP.	0	0.0	2	0.124
ORBINIA RISER	2	0.079	3	0.186
PARANAITES SPECIOSA	1	0.040	21	1.299
PARACNIS FULGENS	61	2.410	4	0.247
PARAPRIONOSPID PINNATA	0	0.0	1	0.062
PHYLLODOCE ARENAE	4	0.158	5	0.309
PHYL C ORNATUS	1	0.040	0	0.0
POLYDORA SOCIALIS	1	0.040	0	0.0
POLYDORA TETRABRANCHIA	2	0.079	0	0.0
PRIONOSPID CRISTATA	18	0.711	7	0.433
RULLIERINEREIS MEXICANA	0	0.0	8	0.495
SCOLCPLCS ARMIGER	8	0.316	10	0.618
SIGALION ARENICOLA	0	0.0	3	0.186
SIGAMBRA BASSI	0	0.0	33	2.041
SPIO PETTIBONEAE	6	0.237	21	1.299
SPIOPANES BOMBYX	6	0.237	9	0.557
STREPTOSYLLIS ARENAE	1	0.040	0	0.0
SIPUNCULICA (PEANUT WORMS)				
UNIDENTIFIED SP.	5	0.198	3	0.186
ARTROPOCOA (CRUSTACEANS)				
AMPHIPODA				
AMPELISCA ABDITA	2	0.079	6	0.371
AMPELISCA VERRILLI	8	0.316	1	0.062
ARGISSA SP.	2	0.079	0	0.0
LISTRIELLA SP.	2	0.079	1	0.062
MONOCILLIDES SP.	10	0.395	1	0.062
PROTHALSTORIUS SP.	385	15.211	38	2.350
PSEUDOPHAUSTORIUS SP.	15	0.593	25	1.546
PSEUDOPLATYISCHNOPUS SP.	141	5.571	38	2.350
SYNCELIDIUM SP.	52	2.055	5	0.309
ANCHURA				
ALBONEA PARETII	1	0.040	5	0.309
PAGURUS LONGICARPUS	3	0.119	5	0.309
BRACHYURA				
PINNIXIA CRISTATA	1	0.040	0	0.0
PINNIXIA LEPTOSYNAPIAE	0	0.0	3	0.186
PINNIXIA PEARSEI	0	0.0	1	0.062
PINNICEERES OSTREUM	0	0.0	3	0.186
PORTUNUS SP.	4	0.158	1	0.062
CALLINASSIDAE				
CALLINASSA JAMAICENSE	0	0.0	1	0.062
CARIDEA				
HIPPCLYTE PLEURACANTHA	1	0.040	0	0.0

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL  
7/26/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>OGYRIDES LIMICOLA</u>	1	0.040	0	0.0
<u>PROCESSA HEMPHILLI</u>	8	0.316	4	0.247
CUMACEA				
<u>CYCLAPSIS SP.</u>	14	0.553	4	0.247
<u>CYCLAPSIS VARIANS</u>	101	3.991	17	1.051
<u>ORYZOSTYLIS SMITHI</u>	4	0.158	2	0.124
LEPTOSTRACA				
<u>NEQALIA SP.</u>	5	0.198	9	0.557
GSTRACCCA				
UNIDENTIFIED SP.	28	1.106	7	0.433
PENAEIDAE				
<u>PENAEUS DUORARUM</u>	1	0.040	0	0.0
SICMATOPODA				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	0.062
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>LUDIA ALTERNATA</u>	0	0.0	1	0.062
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>PELLITA QUINQUESPERECATA</u>	6	0.237	3	0.186
OPHTHUROIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	5	0.198	39	2.412
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.062
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORICAE</u>	16	0.632	191	11.812
TOTALS	2531		1617	
NO. SPECIES		74		54
NO. IND. PER M2		4050		2587
S-W INDEX - M'(LN)		2.8718		3.4385
EVENNESS - J		0.6672		0.7568

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL  
7/27/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.341	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	3	0.180
NEVERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	29	3.295	45	2.703
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECIA	0	0.0	1	0.060
BRACHIOPODA (LAMP SHELLS)				
GLOTTIDIA PYRAMICATA	0	0.0	1	0.060
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	1	0.114	0	0.0
ANACYSIS FLORICANA	0	0.0	1	0.060
CYLICHNELLA BICENTATA	3	0.341	20	1.201
NATICA FUSILLA	5	0.568	29	1.742
OLIVELLA MINUTA	0	0.0	2	0.120
OLIVELLA MUTICA	2	0.227	2	0.120
POLYICES DUPLICATUS	3	0.341	1	0.060
TEREBRA DISLOCATA	1	0.114	2	0.120
TURRITELLA SP.	2	0.227	11	0.661
PELECYPODA (CLAMS)				
CUNA DALLI	0	0.0	1	0.060
ERVILIA CONCENTRICA	2	0.227	5	0.300
LEPTON SP.	7	0.795	9	0.541
LUCINA MULTILINEATA	8	0.909	3	0.180
PITAE SIMPSONI	17	1.932	11	0.661
STRIGILLA MIRABILIS	5	0.568	6	0.360
TELLINA IRIS	0	0.0	1	0.060
TELLINA TEXANA	40	4.545	255	15.315
TELLINA VERSICOLOR	94	10.682	90	5.405
TRACYPYCARDIUM MURICATUM	0	0.0	1	0.060
ANNELIDA (SEGMENTED WORMS)				
POLYCHAETA				
ARMADILLA AGILIS	1	0.114	55	3.706
ARMADILLA MACULATA	2	0.227	3	0.180
ERANIA CLAVATA	0	0.0	1	0.060
CAPITELLA CAPITATA	0	0.0	1	0.060
CHONE SP.	0	0.0	1	0.060
DISPIDIO UNCINATA	2	0.227	1	0.060
EYDIONE LACTEA	0	0.0	1	0.060
GLYCERA AMERICANA	6	0.682	20	1.201
GRUBBULEPIS MEXICANA	0	0.0	1	0.060
GYPTIS VITTATA	0	0.0	1	0.060
HAPLOSCOLOPLOS FOLIOSUS	0	0.0	1	0.060
LOXIA MEDUSA	0	0.0	1	0.060
LUMBERINERIS CRUZENSIS	62	7.045	286	17.177
MAGELONA PETTIBONEAE	1	0.114	0	0.0
MAGELONA RIOJAI	29	3.295	12	0.781
MAGELONA SP.	1	0.114	1	0.060
MESOCALOPTERUS SAGITTARIUS	13	1.477	10	0.601
NEANTHES ACUMINATA	9	1.023	3	0.180

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL  
7/27/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NEPHYS BUCERA</u>	50	5.682	22	1.321
<u>NEPHYS PICTA</u>	1	0.114	5	0.300
<u>ONUPHIS EREMITA OCULATA</u>	28	3.182	15	0.901
<u>ORBINIA RISER</u>	0	0.0	9	0.541
<u>PARACNIS FULGENS</u>	11	1.250	0	0.0
<u>PHYLLODOCE ARENAE</u>	3	0.341	15	1.141
<u>PRIONOSPIO CRISTATA</u>	2	0.227	3	0.180
<u>RULLIERINEREIS MEXICANA</u>	0	0.0	1	0.060
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.060
<u>SCOLOPLCS ARMIGER</u>	0	0.0	1	0.060
<u>SIGALON ARENICOLA</u>	0	0.0	2	0.120
<u>SIGAMBRA BASSI</u>	0	0.0	2	0.120
<u>SPIO PETTIBONEAE</u>	20	2.273	7	0.420
<u>SPIOPHANES BOMBYX</u>	6	0.682	5	0.541
<u>STREPTOSYLLIS ARENAE</u>	4	0.455	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.114	3	0.180
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOMHAUSTORIUS SP.</u>	5	1.023	0	0.0
<u>AMPELISCA VERRILLI</u>	0	0.0	1	0.060
<u>LITRIELLA SP.</u>	0	0.0	2	0.120
<u>LYSIANOPSIS SP.</u>	0	0.0	1	0.060
<u>MONOCLODES SP.</u>	5	1.023	13	0.781
<u>PROTOMHAUSTORIUS SP.</u>	246	27.955	245	14.715
<u>PSEUDCHALSTORIUS SP.</u>	10	1.136	66	3.964
<u>PSEUDOPLATYISCHNOPUS SP.</u>	37	4.205	152	9.129
<u>SYNCHELIDIUM SP.</u>	15	1.705	15	0.901
ANCMURA				
<u>ALBINEA PAREIII</u>	3	0.341	1	0.060
BRACHYURA				
<u>PINNIXIA CRISTATA</u>	4	0.455	0	0.0
<u>PINNOTHERES SP.</u>	3	0.341	5	0.300
<u>POTUNUS SP.</u>	3	0.341	2	0.120
CALLINANASSIDAE				
<u>CALLINANASSA JAMAICENSE</u>	0	0.0	4	0.240
CARIDEA				
<u>HIPPELYTE PLEURACANTHA</u>	0	0.0	2	0.120
<u>PROCESSA HEMPHILLI</u>	8	0.909	2	0.120
CLMACEA				
<u>CYCLAPSIS SP.</u>	18	2.045	8	0.480
<u>CYCLAPSIS VARIANS</u>	14	1.591	40	2.402
<u>CYCLESTYLIS SMITHI</u>	0	0.0	4	0.240
UNIDENTIFIED SP.	0	0.0	2	0.120
ISOPODA				
<u>ANCINA DEPRESSUS</u>	3	0.341	0	0.0
<u>CHIRIDOTEA EXCAVATA</u>	5	1.023	0	0.0
LEPTOSTRACA				
<u>NEBALIA SP.</u>	0	0.0	5	0.300
MYSIDACEA				
<u>PRAUNUS FLEXUOSUS</u>	3	0.341	0	0.0
OSTRACCA				
UNIDENTIFIED SP.	4	0.455	2	0.120
PENAEIDAE				
<u>IRACHYPENAEUS CONSTRICTUS</u>	1	0.114	3	0.180
 ECHINODERMATA				
ECHINOIDEA (SAND COLLARS; URCHINS)				
<u>MELLITA QUINQUESPERFORATA</u>	0	0.0	2	0.120

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL  
7/27/77  
(CONTINUED)

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
HOLOTHUROIDEA (SEA CUCUMBERS)				
UNIDENTIFIED SP.	0	0.0	13	0.781
OPHIURCIDEA (BRITTLE STARS)				
<u>OPHIOPHRAGMUS MOOREI</u>	0	0.0	5	0.300
<u>OPHIOPHRAGMUS BURDEMANI</u>	4	0.455	0	0.0
UNIDENTIFIED SP.	1	0.114	7	0.420
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.060
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	2	0.227	23	1.381
TOTALS	880		1665	
NO. SPECIES	57		80	
NO. IND. PER M2	1408		2664	
S-W INDEX - H <sup>+</sup> (LN)	2.9751		2.9427	
EVENNESS - J	0.7359		0.6715	

**BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL**  
7/28/77

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
<b>CNICARIA</b>				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.064	0	0.0
<b>PLATYHELMINTHES</b>				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.053
<b>NEMERTINEA (RIBBON WORMS)</b>				
UNIDENTIFIED SP.	33	2.126	57	3.006
<b>PHORONIDA (PHORONIDS)</b>				
<u>PHORENIS ARCHITECIA</u>	0	0.0	1	0.053
<b>BRACHIOPODA (LAMP SHELLS)</b>				
<u>GLOTTIDIA PYRAMIDATA</u>	0	0.0	19	1.002
<b>MOLLUSCA (SHELLFISH)</b>				
GASTROPODA (SNAILS)				
<u>CYLICHNELLA BIDENTATA</u>	24	1.546	31	1.635
<u>NATICA PUSILLA</u>	1	0.064	15	0.791
<u>OLIVELLA MINUTA</u>	2	0.129	2	0.105
<u>OLIVELLA MUTICA</u>	1	0.064	4	0.211
<u>POLINICES DUPLICATUS</u>	0	0.0	1	0.053
<u>TEREBRA CINCAYA</u>	1	0.064	0	0.0
<u>TURBINILLA CENRADI</u>	3	0.193	0	0.0
<u>TURBINILLA SP.</u>	11	0.709	6	0.316
PELECYPODA (CLAMS)				
<u>ERVILIA CONCENTRICA</u>	4	0.258	1	0.053
<u>LEPTON SP.</u>	13	0.838	3	0.158
<u>LUCINA MULTILINEATA</u>	18	1.160	74	3.903
<u>PERILEPTA MARGARITACEUM</u>	0	0.0	2	0.105
<u>PITAE SIMPSONI</u>	53	3.415	17	0.897
<u>STRIGILLA BIRABILLIS</u>	4	0.258	5	0.264
<u>TELLINA AEGUISIRIATA</u>	0	0.0	1	0.053
<u>TELLINA TEXANA</u>	217	13.982	137	7.226
<u>TELLINA VERSICOLOR</u>	108	6.959	58	5.169
<u>TRACHYCARDIUM MURICATUM</u>	0	0.0	1	0.053
<b>ANNELIDA (SEGMENTED WORMS)</b>				
OLIGochaeta				
UNIDENTIFIED SP.	4	0.258	1	0.053
POLYCHAETA				
<u>APOPRIONOSPIO PYGMAEA</u>	2	0.129	4	0.211
<u>ARICIDEA FRAGILIS</u>	1	0.064	5	0.264
<u>ARMANDIA AGILIS</u>	36	2.320	27	4.589
<u>ARMANDIA MACULATA</u>	20	1.289	26	1.371
<u>BRANIA CLAVATA</u>	0	0.0	4	0.211
<u>BRANIA BELLEFLEETENSIS</u>	4	0.258	2	0.105
<u>CAPITELLA CAPITATA</u>	1	0.064	53	2.795
<u>CHONE SP.</u>	1	0.064	2	0.105
<u>DISPIDO UNCINATA</u>	1	0.064	0	0.0
<u>EYEDINE LACTEA</u>	1	0.064	2	0.105
<u>GLYCERA AMERICANA</u>	13	0.838	6	0.316
<u>GONIACA LITIGREA</u>	0	0.0	1	0.053
<u>GYPSIS VITTATA</u>	0	0.0	10	0.527
<u>HAPLISCELOPS ROBUSTUS</u>	0	0.0	1	0.053
<u>LOEBA MEDUSA</u>	1	0.064	1	0.053
<u>LUMBRINEIS CRUZENSIS</u>	195	12.564	208	10.970
<u>MACELINA RIOJA</u>	3	0.193	1	0.053

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL  
7/28/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MAGELCNA SP.</u>	12	0.773	8	0.422
<u>MESOCYPTOPTERUS SAGITTARIUS</u>	9	0.580	12	0.633
<u>MINUSPIO CIRRIFERA</u>	1	0.064	0	0.0
<u>NEANTHES ACUMINATA</u>	0	0.0	28	1.477
<u>NEPHYS BUCERA</u>	35	2.255	26	1.371
<u>NEPHYS PICTA</u>	18	1.160	49	2.584
<u>ONUPHIS EREMITA Oculata</u>	8	0.515	9	0.475
<u>ORBINIA RISER</u>	2	0.129	7	0.369
<u>PARANATHES SPECIOSA</u>	0	0.0	2	0.105
<u>PARACNIS FULGENS</u>	17	1.095	8	0.422
<u>PHYLLODOCE ARENAE</u>	6	0.387	19	1.002
<u>POLYCORA SOCIALIS</u>	2	0.129	0	0.0
<u>POLYCORA TETRABRANCHIA</u>	0	0.0	1	0.053
<u>PRIONOSPION CRISTATA</u>	4	0.258	10	0.527
<u>RULLIERINEREIS MEXICANA</u>	0	0.0	2	0.105
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.053
<u>SCOLOPLOS ARMIGER</u>	4	0.258	2	0.105
<u>SCOLOPLOS RUBRA</u>	2	0.129	0	0.0
<u>SIGAMBRA BASSI</u>	1	0.064	0	0.0
<u>SPION PETTIBONEAE</u>	7	0.451	15	0.791
<u>SPIOPHANE BOMBYX</u>	11	0.709	13	0.686
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	4	0.258	4	0.211
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	1	0.064	0	0.0
<u>AMPELISCA ABDITA</u>	0	0.0	1	0.053
<u>ERICHTHONIUS SP.</u>	0	0.0	1	0.053
<u>LEMBOS SP.</u>	0	0.0	1	0.053
<u>LITTELLIA SP.</u>	5	0.322	3	0.158
<u>DELITA APPENDICULATA</u>	0	0.0	1	0.053
<u>NICEFECTOPUS SP.</u>	0	0.0	24	1.266
<u>MONOCULODES SP.</u>	9	0.580	31	1.635
<u>PROTYCHAUSTORIUS SP.</u>	307	19.781	245	12.922
<u>PSEUDOCYTHAUSTORIUS SP.</u>	20	1.289	25	1.319
<u>PSEUDOPALATYISCHNOPUS SP.</u>	114	7.345	50	2.637
<u>SYNCELIDION SP.</u>	23	1.482	4	0.211
BRACHYURA				
<u>CALLINECTES SAPIDUS</u>	0	0.0	2	0.105
<u>DISSODACTYLUS MELLITAE</u>	13	0.838	30	1.582
<u>PINAXIA SAYANA</u>	0	0.0	9	0.475
CALLINANASSIDAE				
<u>CALLINANASSA JAMAICENSE</u>	4	0.258	4	0.211
CARIDEA				
<u>HIPPOLYTE PLEURACANTHA</u>	0	0.0	5	0.264
<u>PROCESSA HEMPHILLI</u>	1	0.064	5	0.264
CUMACEA				
<u>CYCLAPES SP.</u>	25	1.611	19	1.002
<u>CYCLAPES VARIANS</u>	38	2.448	199	10.496
<u>CRYDIELLUS SMITHI</u>	3	0.193	8	0.422
LEPTOSTRACA				
<u>NEBALIA SP.</u>	4	0.258	26	1.371
OSTRACODA				
UNIDENTIFIED SP.	17	1.095	4	0.211
STOMATOPODA				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	0.053

ECHINODERMATA  
ECHINOIDEA (SAND DOLLARS; URCHINS)

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL  
7/28/77  
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<del>MELLITA QUINQUESPERFORATA</del>	18	1.160	35	1.846
<del>OPHTURCTOEA (BRITTLE STARS)</del>	0	0.0	3	0.158
<del>OPHICHRAGMUS BURDEMANI</del>	3	0.193	9	0.475
UNIDENTIFIED SP.				
HEMICHORDATA				
ENTEROPNEUSTA (ACRON WORMS)				
UNIDENTIFIED SP.	1	0.064	2	0.105
CEPHALOCORDATA (LANCELETS)				
BRANCHIOSTOMA FLORIDAE	26	1.675	43	2.268
TOTALS	1552		1896	
NO. SPECIES		66		83
NO. IND. PER M2		2483		3034
S-W INDEX - H'(LN)		3.0020		3.3704
EVENNESS - J		0.7165		0.7627



#### APPENDIX D

##### FAUNAL SIMILARITY MATRICES

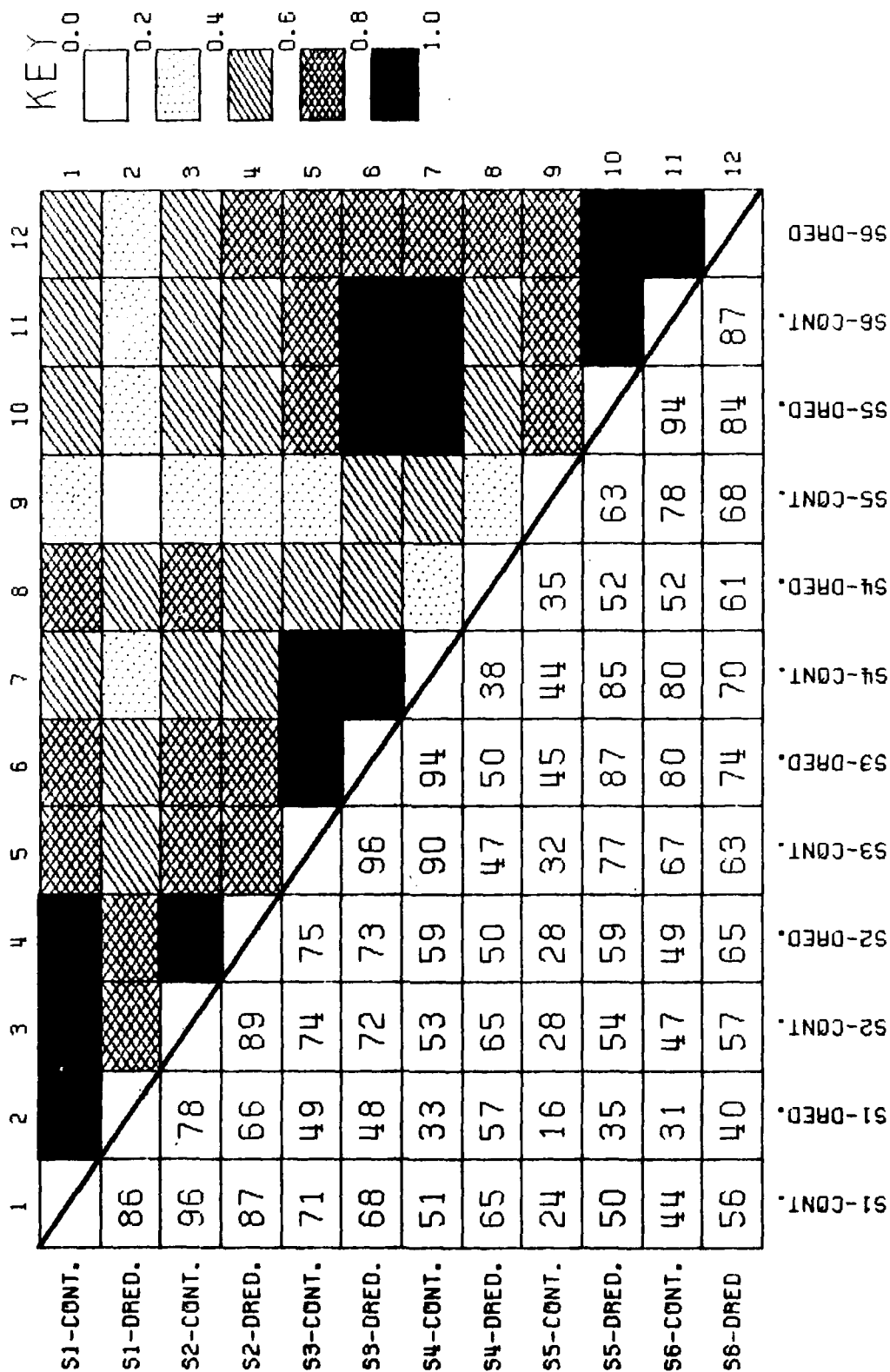
Similarity matrices for time-sequence samples at station 1, and one time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations, and with matrix values multiplied by 100)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

KEY

0.0 0.2 0.4 0.6 0.8 1.0



# STATIONS 1-6 (7/11/77)

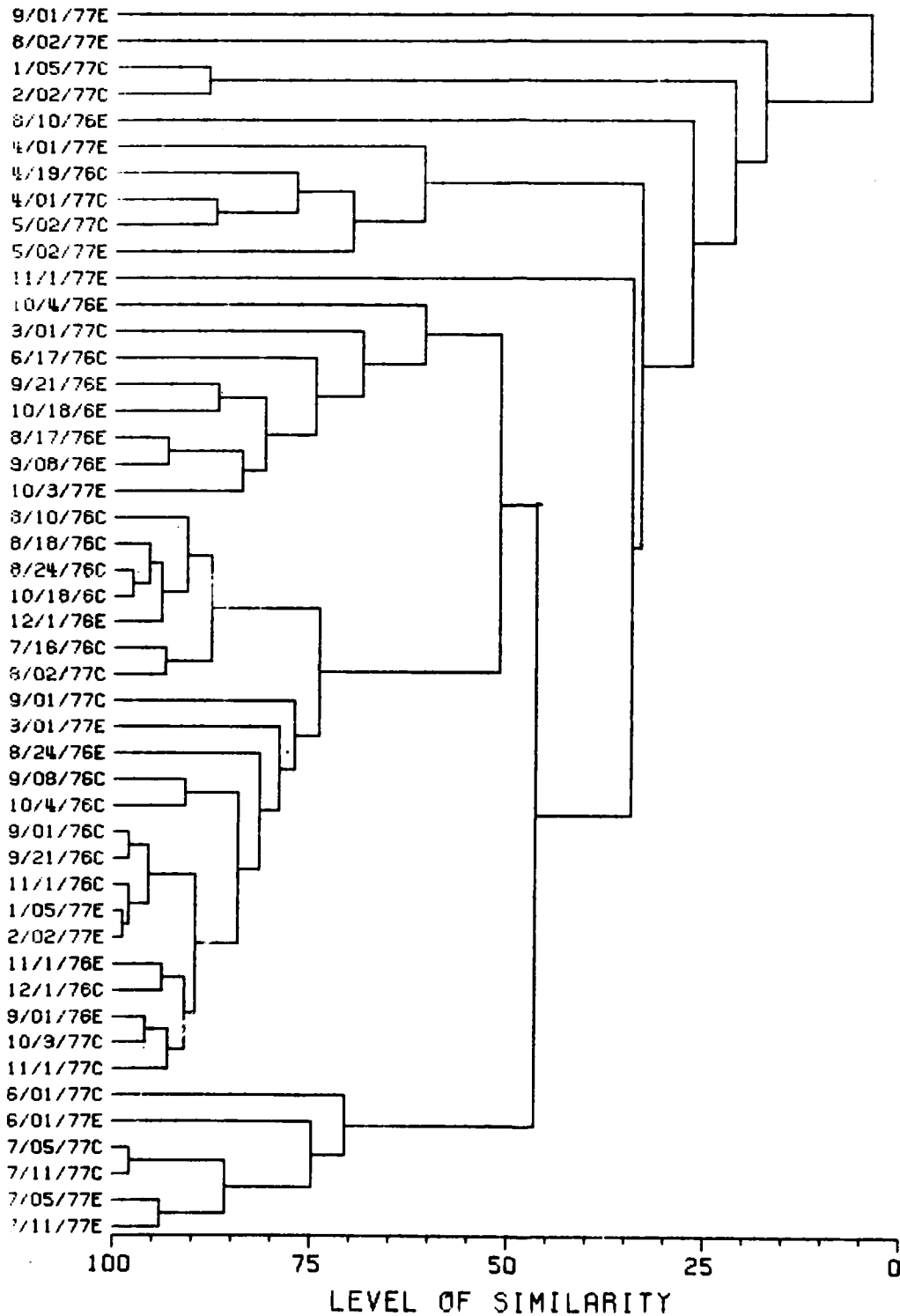


## APPENDIX E

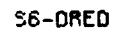
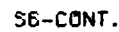
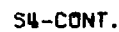
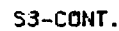
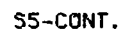
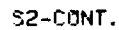
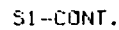
### FAUNAL CLASSIFICATION ANALYSES

Classification analyses for time-sequence samples at station 1, and one-time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

# TREASURE ISLAND DREDGE EFFECTS (APRIL 1976- NOVEMBER 1977)



S1-DPED.



STATIONS

100

67

33

0

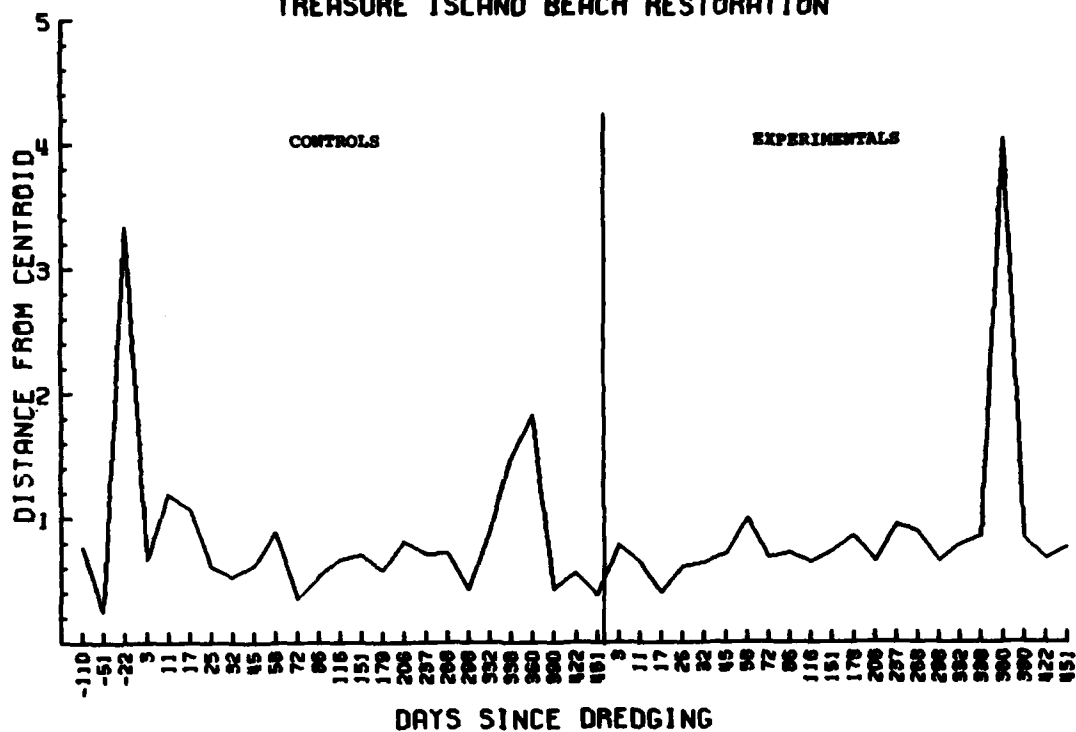
LEVEL OF SIMILARITY

## APPENDIX F

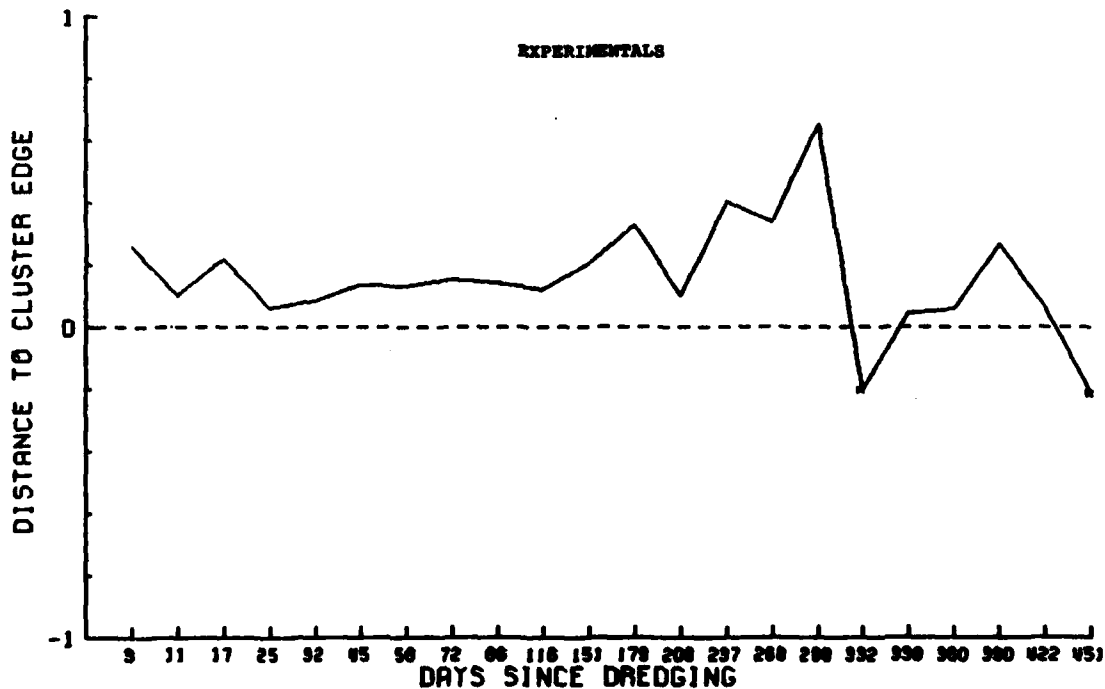
### STABILITY ANALYSES

Stability analyses for time-sequence samples at station 1 showing sample variations and time to faunal recovery--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

# TREASURE ISLAND BEACH RESTORATION



# TREASURE ISLAND BEACH RESTORATION





Saloman, Carl H.  
 Benthic community response to dredging borrow pits, Panama City Beach, Florida / by Carl H. Saloman, Steven P. Naughton, and John L. Taylor.--Fort Belvoir, Va. : U.S. Army Coastal Engineering Research Center ; Springfield, Va. : available from NTIS, 1982.  
 [138] p. : ill. ; 28 cm.--(Miscellaneous report ; no. 82-3)  
 Prepared for Coastal Engineering Research Center by National Marine Fisheries Service, Southeast Fisheries Center; DACW72-81-M-0198.  
 Report gives biological and physical oceanographic data from baseline work, and studies of dredged and undredged sediments before and after dredging (9-meter contour) at Panama City Beach, Florida. Analyses of hydrology, sediments, and benthos are included.  
 1. Beach nourishment--Environmental aspects--Florida--Panama City Beach. 2. Benthos. 3. Dredging. 4. Panama City Beach (Fla.).  
 I. Naughton, Steven P. II. Taylor, John L. III. Coastal Engineering Research Center (U.S.). IV. United States. National Marine Fisheries Service. V. Title. VI. Series: Miscellaneous report (Coastal Engineering Research Center (U.S.)); no. 82-3.  
 TC203 .U581ar no. 82-3 627

Saloman, Carl H.  
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